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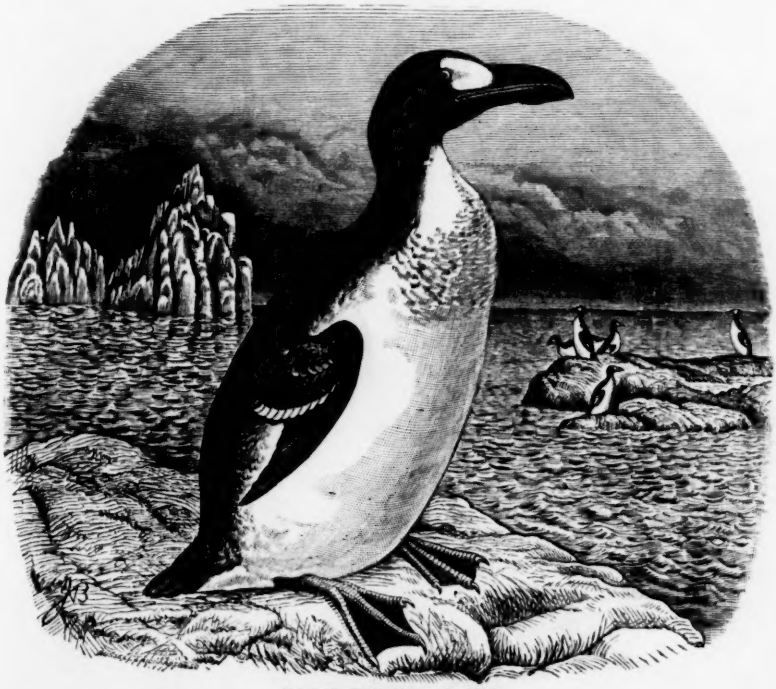

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Geo. N. Lawrence.

THE AUK:

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VOL. XIII. JANUARY, 1896. NO. 1.

IN MEMORIAM: GEORGE NEWBOLD LAWRENCE.[1]

Born, 20th Oct., 1806. Died, 17th Jan., 1895.

BY D. G. ELLIOT, F. R. S. E.

"To him who in the love of Nature holds
Communion with her visible forms, she speaks
A various language."

and none can understand her rythmic lines so well as he who has taken the denizens of the forest and the fields into intimate fellowship with himself, and gained them for his own familiar friends. With such a one Nature holds especial converse, and unfolds to him the secrets hidden from all ordinary eyes. The way of a serpent on a rock, and of an eagle in the air, the wisest of men confessed he was unable to understand, and yet by many, in the closing years of this nineteenth century, profiting by their own, and the labors of those who have preceded them, in the close and earnest study of Nature's laws and methods, much more intricate and obtruse problems than those which perplexed the King of Israel have been clearly comprehended. In that branch of science which relates to the living things of earth, and

[1] An address delivered at the Thirteenth Congress of the American Ornithologists' Union, at Washington, D. C., Nov. 12, 1895.

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reflecting upon what has been accomplished in solving its mysteries, we look back upon the past, and behold, from out the mists of by-gone years shadowy forms arise refulgent with the glory of illustrious names, won by their possessors when in the flesh they struggled in this earthly literary arena, and who by the influence they exert in their works, remain with us still conquerors in the fight, though dead. How long that shadowy line has grown, and how far back into the silent past it reaches, and how rapidly, alas for the living, is that column augmented, of those scientific soldiers, who though they were members of different companies and regiments, yet each and all battled for the same cause, and died conscious of having fought a good fight, and upheld the scientific faith. In their written words they still speak to us, and point out the lines which their successors are to follow. While our thoughts are thus directed to this invisible army of once earnest earthly workers, we are reminded that we have assembled here to-day to pay our tribute of respect to one who but lately has gone to join that shadowy host, and who while with us was an honored member of this Union, a distinguished ornithologist, and to some of us a personal valued friend.

In the death of George Newbold Lawrence, though the great number of his accomplished years had diminished his scientific activity, ornithology has met with a serious loss. Born in the city of New York in 1806, his life was lengthened to almost thrice the period usually given to the generations of men, but the judgment passed by the Psalmist, on the years that exceeded those allotted to man, that they should bring nothing but "labor and sorrow," was never written for him, and the evening of his days was the most peaceful of his long life. Born in 1806, and gone from among us, as it seems but yesterday, think of the extent of time encompassed in the duration of this single life. Almost a century of active work, in the daily pursuit of an engrossing business, in the field studying the ways of our feathered creatures, in the closet laboring to solve perplexing problems that had to be met, in all that busy century of his existence there was little time yielded to idle recreation. During the period covered by this life was witnessed the rise,

progress, and attainment to its present important position in Natural Science, of American Ornithology. In 1806 there were no American ornithologists. He who was to shed so great a lustre upon the science by his immortal work, had as yet given no outward sign, and at this date Audubon, a young man, was unknown. Wilson was busy preparing his work upon our birds, which, however, did not make its appearance until two years after Mr. Lawrence's birth. As we come down the years hearken to the catalogue of names of celebrated men who have adorned the annals of ornithology in this land, finished their work, and passed over the river beyond the unknown farther shore. Beside the two already mentioned we recall Bonaparte, Jameson, Jardine, Ord, Say, Swainson, Richardson, Nuttall, Prince of Wied, Giraud, DeKay, Townsend, Cassin, Baird, Hermann, Suckley, Kennicott, beside many that are still active workers in the cause. But all of these who have been mentioned were the friends and acquaintances of Mr. Lawrence. They died not, most of them, in their early youth, cut off in the midst of their powers, with the hand still guiding the plough of investigation and research through an unfinished scientific furrow, but, on the contrary, many of them saw the accomplishment of their desires in their completed works and the attainment of advanced years. But time seemed to take no heed of our friend, touched not his powers, but left him unscathed, alert and active in the midst of his contemporaries falling about him on every side.

The Lawrence family from which the ornithologist descended was English, residing at Great St. Albans, Hertfordshire, and the first members to come to this country, where they arrived in 1635, were John and William, aged seventeen and twelve respectively, with their mother and sister. They settled first at Plymouth Colony, and then, in 1644, removed to Long Island where John became one of the Patentees of Hempstead. In the following year they moved to Flushing where the brothers, with others, obtained the patent of that place. John, in 1658, removed to New Amsterdam, and was one of the first aldermen of New York after its incorporation and change of name by the English, and its mayor in 1672. William, from whom Lawrence's branch decended,

continued to reside at Flushing, where he married Elizabeth Smith of Smithtown. After his death, his widow married Sir Philip Carteret, Governor of New Jersey, who named Elizabethtown after her.

From his earliest youth George Lawrence was a lover of birds, and passed much of his spare time studying their habits. But the early age when he entered actively in business (for he was only sixteen when he became a clerk, and twenty when he was made a partner in his father's house), did not permit him to have much leisure to devote to ornithology. In 1820, he was permitted to have a gun, seventy-five years ago! and then he began to pay attention to the movements of the feathered hosts, their arrival and departure in the spring and autumn. At this time he was living during the summer at his father's country place, called 'Forest Hill,' about eight miles from the City Hall, on the high ground overlooking Manhattanville and the Hudson River, not very far distant from where the American Museum of Natural History now stands. He has, in one of his papers, recorded his observations of bird migration at this spot, which in view of our knowledge of the locality as it is to-day, sounds very strangely to us. From the middle of July for some weeks there would be, every afternoon, a flight of Red-winged Blackbirds (*Agelaius phœniceus*), in flocks of fifty or more individuals, while in August and September there would be late in the day a continuous flight of White-bellied Swallows (*Tachycineta bicolor*), with a few Barn Swallows (*Chelidon erythrogaster*). At the beginning of September, when there was a strong northwest wind, Passenger Pigeons (*Ectopistes migratorius*) would appear in great numbers in the mornings, with occasional flocks throughout the day. From Forest Hill north was an unbroken forest to Fort Washington Point, and the Pigeons could be seen speeding over the tree tops at a rate of seventy-five miles or more an hour. Another of the old country seats at that time was Claremont, now for some years used as a restaurant and situated not far from General Grant's tomb, and during one of these flights of the Pigeons more than a hundred were shot one morning by a gentleman from the roof of the dwelling. He enumerates many other species of birds that passed Forest Hill during the various months of the summer, and also speaks of the Robins pursued by gunners in

the high woods where is now Third Avenue and 20th Street. At the time the Robins were migrating there would frequently be seen large flocks of Meadowlarks (*Sturnella magna*) going south, and they would congregate in great numbers in what were then pasture fields, about where Broadway and 40th Street now is. He tells of skating from where the Tombs now stand in Centre Street, down the Canal that ran through the middle of Canal Street, passing under the wooden bridge that spanned it at Broadway, onto the Lispenard's meadows which stretched away to the Hudson River. To those of us who are conversant with the localities in the metropolis just mentioned, it seems strange indeed to hear one who has but just left us speak of them as familiar ground to him, when they were yet covered in great part by the primeval woods. It brings to our minds more forcibly than almost anything else can what seventy-five years in the life of our country, and of one single witness means.

It was while the Lawrences were living at Forest Hill that J. J. Audubon purchased several acres and built his house in what is now known as Audubon Park. Lawrence became intimate with his sons, Victor and John, yet he saw but little of the naturalist himself, who was then failing in health.

While thus studying the feathered tribes in his youth and early manhood, his knowledge did not extend beyond that gained from observation of birds' habits, and such appreciation of the subject as the possession of a few specimens enabled him to acquire, but ornithology as a science was unknown to him. Thus time passed on, and Lawrence was recognized as the successful merchant with, perhaps to a few of his friends, a great fondness for birds, but there was no evidence that he was in later years to become one of the great triumvirate, of what has been termed the Bairdian Epoch of American Ornithology.

In the year 1841 occurred one of those apparently trifling incidents in one's life that often alter its entire current, and which in this instance served to change Lawrence's interest in birds (which up to this period had been merely regarded as a pastime) into a serious scientific study. He and J. P. Giraud, who were among the first to make collections of birds found in the United States, were invited by Mr. J. G. Bell to come to his

room to meet a young ornithologist who was to show some facts in the anatomy of birds, especially exhibiting the muscles that move the wings. He then and there made the acquaintance of Spencer F. Baird, than whom no naturalist that ever lived possessed to such a degree the power to imbue others with his own enthusiasm, and to attract them to become devotees of the study of Nature's Kingdom by the irresistible magnetism of his own personality. The acquaintance thus formed soon ripened into an intimacy that never ceased nor slackened, but strengthened with the rolling years, until, like so many of Lawrence's fellow-workers, his guide and friend passed away from earth.

This friendship with Baird brought forth almost immediate results, and in 1842, when he was thirty-six years of age, appeared Lawrence's first scientific paper, the pioneer of that long line of publications which was destined to extend throughout the next fifty years. It was devoted to a description of the Black Brant (*Bernicla nigricans*), and with a happier fate than falls to the efforts of many budding ornithologists thirsting for immortality, this new creation was pronounced very good. Once launched in scientific work, every moment that could be snatched from mercantile pursuits that claimed the major portion of the day was given to the investigation of birds, and his contributions to different periodicals devoted to natural science increased in frequency and importance. Nearly at the same time with the advent of Lawrence's first paper, appeared one from the pen of a new writer, who was also to be associated with Lawrence in some of his most important work, and who by his great attainments and profound widespread knowledge in ornithological lore was to exert a deep and powerful influence on the science, and cause the name of John Cassin to be known and held in high repute throughout the world. It is fitting that as this form in shadowy lines moves across the vista of passed scenes, I should pay a tribute to one who perhaps more than any other was my guide and instructor in natural science, and who in certain lines of scientific investigation stood without a peer amid those whose works have dignified and rendered illustrious American ornithology. Baird, Cassin, Lawrence,— these were the names that represented for many years our science in the New World, the triumvirate

that dominated the period in which they unitedly labored. In 1869, in the midst of his powers, when it seemed there might be many years of profitable work yet in store, Cassin passed away, followed later by Baird, with labors more completely finished; and now it has fallen to my lot, who, when I first became acquainted with these celebrated men, was regarded by them but as an enthusiastic boy, to pay such tribute as I may to Lawrence who has laid down his pen after accomplishing the fullness of his years, his labors completely ended.

For the first ten years or so of his literary work, Lawrence was engaged in investigating the birds of the United States, and describing new forms, and his labors in the avifauna north of Mexico largely ceased with the completion of his portion of the ninth volume of the Pacific Railroad Reports, the fruit of the joint labors of Baird, Cassin, and Lawrence. This work created a revolution in the technicalities and methods of American ornithology, sweeping away all the old land-marks, and introducing a new era, a new system, and practically a new science. Lawrence's part in this great work was restricted to such of the water birds as were comprised in the Longipennes, Totipalmi, and Brachypteri. From this year, 1858, to the end of his scientific career, Lawrence devoted himself mainly to the birds of Central and South America, Cuba and the West India Islands, and he published continuously for nearly fifty years, his last paper appearing in 'The Auk,' in January, 1891. During his active scientific life he published in all one hundred and twenty-one papers, and described three hundred and twenty-three species as new, most of which have stood the test of subsequent investigation. In his work he showed much patient research, was slow to arrive at a conclusion, careful in all his comparisons, diligent in seeking his authorities, ever ready and willing to receive suggestions, and to acknowledge any error he might inadvertently have committed. Man is born to commit errors. I think naturalists are more convinced of that fact than any other class, but those who admit having done so are the exceptions, and therefore entitled to the more honor.

Lawrence's writings were mainly confined to the description of new forms, or lists of the birds in certain localities, and he never attempted monographic essays, or to embody his views and the

results of his investigations in a complete book form, but he was a faithful laborer in laying the foundation upon which others might raise a noble edifice. His knowledge of the birds of the New World was great and varied, and no one was ever more willing than he to place it all at the service of any seeking information. Systematic ornithology, and the great and absorbing questions of distribution, causes of migration, evolution, effects of environment on races and species, natural selection, and similar problems that have engaged the attention of many of his contemporaries in late years, were passed unheeded, and he was satisfied to restrict his work to the simpler branches of the science. But it is necessary in the construction of any great building that artificers of every rank and degree of skill should be available in order to produce the united, complete, and harmonious whole; and so it is fortunate for our science in the New World that it found so capable a master-workman, willing to devote his time and abilities to the formation and strengthening of the first stories of her stately edifice. The value of his labors was acknowledged throughout the world by ornithologists of every nation, and recognition was accorded him by a large number of learned and scientific societies. He was an Honorary Member of this Union, as well as one of its Founders and Member of its Council; also an Honorary Member of the Linnæan Society of New York, Foreign Member of the British Ornithologists' Union, Member of the New York Historical and Geographical Societies, Corresponding Member of the Zoölogical Society of London, of the Academy of Natural Sciences of Philadelphia, of the Natural History Society of Boston, and many others.

He was an active and important member of the New York Lyceum of Natural History, which he joined in 1845, famous throughout the world wherever zoölogical science is known, but now engulfed in the New York Acádemy of Sciences. It was through the exertions and faithfulness of Lawrence and a few other devoted men of his generation, that this old historic society was kept alive in the time of its greatest need, and I remember well the little band that used to meet once a week in the College of Physicians and Surgeons on 14th Street in the sixties, and, under the presidency of Major Delafield, read their papers and

discuss subjects of mutual interest. In this company Lawrence was always present, and he published all, or nearly all his writings in the 'Annals' of the Society, until it disappeared in the one with a more resounding name; but to the suppression of the title under which the old corporation had gained an enviable rank throughout the world, he was never reconciled. He, however, became a member, which indeed was his of right, then Fellow, and finally a Patron of the Lyceum's successor. He was one of the founders of the New York College of Pharmacy. In recognition of his labors, his brother ornithologists throughout the world conferred his name upon one genus and twenty species of birds, a more enduring monument than any raised from bronze or marble.

Lawrence's rank as an ornithologist will always be a prominent one, on account of the particular period of his activity, the men with whom he was associated, and the patient, faithful character of his scientific work, and his name will always adorn the annals of American ornithology.

But it is of the man himself, rather than the ornithologist, that I best like to think and speak. I cannot recollect the time when I did not know George N. Lawrence, and from the closest intimacy with his sons and various other members of his family, and the mutual interest in our sciences that naturally brought us together, I suppose it can be said that I knew him better than did any other naturalist, not even excepting Baird. Courteous, gentle, simple in his tastes and habits, almost child-like in his deference to the opinions of others in whom he reposed confidence, asserting his own opinions with a modesty that was remarkable, because so rare, Lawrence was a conspicuous example of that personage to whom we all turn with mingled feelings of admiration and respect — a gentlemen of the Old School, of the days of our ancestors, when knee breeches and brocaded silks were parts of the ordinary costume, and the manners of the age were characterized by dignity and a respectful demeanor. Although verging on to four score and ten years, Lawrence never grew old, and his interests in the sports of the fields and the occupations of youth were as lively and intense in his last year as in the days when he was wont to shoulder his gun and take an active share in them. The last time I saw him, but a short while before his death, he was

as eager for news of ornithology and ornithologists as he ever displayed in the days of his activity, and his mind was clear and showed no evidence of his great age. The end was peaceful, and he passed away only a few days after the death of his wife, to whom during the period of her long illness, he had ever exhibited a touching, affectionate devotion rarely witnessed.

With Lawrence ends an era of our science in the New World. In a certain sense he belonged to the past, to the ranks of those who directed ornithological science into a new path in the middle of this century before a large proportion of the present workers were born, and although he wrote and published as late as four years ago, his name is best associated with those long since passed from earth. What he did, he did well, to the best of his ability, and he has left an unblemished record and an untarnished name. Happy for that Science! Happy for that land! which can claim for its own men like this, pure in life and mind, devoted to the interests which command the highest thought of their being, and which bring good to the many. There is one more escutcheon on Fame's temple wall, one more name inscribed in line of golden light, and as we contemplate this life, and behold the "upright man and the just," and mark his peaceful passing from earth's familiar scenes, we seem to hear, as though from out a cloud illumined with celestial fire, a voice uttering the solemn admonition —

> "So live, that when thy summons comes . . . .
> [Thou too shall] approach thy grave
> Like one that wraps the drapery of his couch
> About him, and lies down to pleasant dreams."

A. Hoen & Co. Lithocaustic, Baltimore.

ARDETTA NEOXENA CORY.

THE STANDING OF *ARDETTA NEOXENA.*

BY FRANK M. CHAPMAN.

Plate I.

CERTAIN facts in the history of this well-named Bittern have caused several writers, myself among the number, to speak of it as probably an aberrant form or color-phase of our widely distributed *Ardetta exilis*. In figuring this peculiar bird in 'The Auk' an attempt has therefore been made to bring together for direct comparison as many of the known specimens as were available, for the purpose of deciding if possible the bird's standing.

Described by Mr. Cory in 1886 from a specimen taken in the Okeechobee region of Florida, there have since been captured thirteen additional specimens. Of this number five are from the type locality in Florida, one is from Michigan, and seven are from Toronto.[1] Through the generosity of the owners of these rare birds I now have before me ten of the fourteen recorded specimens. This series presents much variation, to be spoken of more particularly after comparing the apparently normal plumage of the adult male and female and immature male with the corresponding plumages of *Ardetta exilis*.

Ardetta neoxena, ♂ *ad.*	*Ardetta exilis*, ♂ *ad.*
Crown glossy black.	Crown glossy black.
Back of the neck glossy black.	Back of the neck chestnut rufous.
Interscapulars entirely glossy black without buffy margins.	Interscapulars glossy black, outer edge of outer ones margined with buffy white.
Tail glossy black.	Tail glossy black.
Front of the neck chestnut.	Front of the neck white more or less washed with buffy.
Abdomen, sides, and tibiæ mixed chestnut, black, and smoky brown.	Abdomen, sides, and tibiæ white more or less washed with buffy.
Under tail-coverts glossy black.	Under tail-coverts white slightly tinged with buffy.
Primaries slate gray *without* cinnamon rufous tips.	Primaries slate gray, the outer ones sometimes, the inner ones always tipped with dull cinnamon rufous.

[1] A fifteenth specimen, from Wisconsin, is recorded beyond in this number of 'The Auk.'

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Back of the neck glossy black.	Back of the neck chestnut rufous.
Interscapulars entirely glossy black without buffy margins.	Interscapulars glossy black, outer edge of outer ones margined with buffy white.
Tail glossy black.	Tail glossy black.
Front of the neck chestnut.	Front of the neck white more or less washed with buffy.
Abdomen, sides, and tibiæ mixed chestnut, black, and smoky brown.	Abdomen, sides, and tibiæ white more or less washed with buffy.
Under tail-coverts glossy black.	Under tail-coverts white slightly tinged with buffy.
Primaries slate gray *without* cinnamon rufous tips.	Primaries slate gray, the outer ones sometimes, the inner ones always tipped with dull cinnamon rufous.

[1] A fifteenth specimen, from Wisconsin, is recorded beyond in this number of 'The Auk.'

Outer secondaries slate gray without cinnamon rufous tips; inner secondaries black, glossy on the outer web and *without* chestnut rufous.

Lesser wing-coverts at bend of wing black.

Median wing-coverts chestnut.

Greater wing-coverts blackish slate gray, the inner ones with chestnut tips.

Under wing-coverts chestnut.

Outer secondaries slate gray tipped with cinnamon rufous; inner secondaries with outer web chestnut rufous, inner web blackish slate gray.

Lesser wing-coverts at bend of wing chestnut rufous.

Median wing-coverts cream buff.

Greater wing-coverts with basal half slate gray, terminal half chestnut rufous, the inner ones washed with cream-buff on the outer vane.

Under wing-coverts white, grayer at the base, and washed with buffy.

It will be seen from this comparison that there is no regularity in the substitution of colors; hence these birds differ not alone in color, but also in pattern of coloration. Thus, the chestnut of *neoxena* may replace either the white or buff of *exilis*, or the former may be black where the latter is chestnut rufous, buff, or white. The differences in distribution of color, or relative markings of the same parts, are most marked in the interscapulars, under tail-coverts, greater wing-coverts, and tips of the quills.

Ardetta neoxena, ♀ *ad.*

Similar to male but crown slightly, and back decidedly duller.

Ardetta exilis, ♀ *ad.*

Similar to male but black of head tinged with brown; back rich, dark brown; interscapulars more widely margined with buffy; under parts more heavily washed with buff, and with numerous blackish shaft-streaks, and in places slight blackish mottlings.

Measurements.

Six adults (5 males and 1 female, 4 from Florida and 2 from Toronto) average: wing, 4.59; tail, 1.56; tarsus, 1.56; culmen, 1.76.

Six adults (4 males and 2 females, 3 from Florida and 3 from Erie, Pa.) average: wing, 4.60; tail, 1.59; tarsus, 1.59; culmen, 1.81.

My notes on the female of *neoxena* are based on the original records and Mr. Hubert Brown's comparison of the two adult Toronto females, neither of which I have seen. One of these

has been compared by Mr. Brewster with a bird (No. 44,087) in his collection, and which he has loaned me. Mr. Brewster remarks: "The Toronto bird is a trifle the darker on the back and the chestnut of its under parts is slightly richer, but in other respects the two specimens are almost exactly alike." This No. 44,087 is not sexed, but with little doubt is an adult female. The outer margins of the interscapulars are decidedly brownish, but whether this marking appears in the two Toronto birds is not stated.

It appears, therefore, that there is less sexual difference in *neoxena* than in *exilis*. In size the two birds agree.

Ardetta neoxena, ♂ *immature.*

Similar to adult male but black of the head and back somewhat duller, the outer margins of the interscapulars slightly tinged with chestnut.

Ardetta exilis, ♂ *immature.*

Similar to adult male but crown duller, the feathers margined with chestnut rufous; back slate gray or blackish slate gray, the feathers tipped with chestnut rufous and ochraceous buff; under parts more heavily washed with buff, and with numerous blackish shaft-streaks.

Four of the ten specimens of *neoxena* now in my possession are birds of the year, three of them still showing remains of the nestling plumage. This is especially marked in a male from Toronto (Aug. 24, J. H. Ames) in which the nestling plumage still covers the abdominal region while the feathers of the head and back, although fully grown, still have the downy neossoptiles attached to their tips. These specimens are of the utmost importance for they evidently show that the immature plumage of *neoxena*, or the first plumage succeeding the nestling down, is practically like that of the adult, while *exilis*, on the contrary, at this age, differs markedly from the adult.

Here also should be mentioned the notes of Mr. J. F. Menge on the nest and young of *neoxena*, as quoted by Mr. W. E. D. Scott.[1] Mr. Menge, who collected four of the six Florida specimens, writes as follows: "I herewith send you notes concerning the Bittern as requested by Mr. J. W. Atkins, first found on 8th

[1] Auk, VIII, 1891, 309.

of June, 1890, two and a half miles above Fort Thompson, Florida, in a small willow swamp on the borders of Lake Flint [*lege* Flirt]. It was built of willow twigs and lined inside with maiden cane leaves. It was in a low bush two feet and a half above the surface of the water. There were four young birds, about two-thirds grown, in the nest. I had one of the old birds in my hand, which I think was the female. She was not inclined to fight and would not leave the nest. The other old bird was two or three feet from me and seemed a much larger bird. I did not disturb them and when I let the old bird go she hopped back on her nest as though she was accustomed to being handled."

This comparison shows such striking differences between these two birds, that to give further reasons for regarding them as specifically distinct seems much like proving an axiom.

Aside from the differences in color and pattern of coloration and the manner in which the mature plumage is acquired, the fact that the young of *neoxena* resemble the adults, and that no example of *exilis* showing an approach to *neoxena* has ever been recorded, would seem to give Cory's Bittern undisputed title to full specific rank.

While we may therefore reject the suggestion that *neoxena* is a color-phase of *exilis*, and in fact leave *exilis* entirely out of the question, the specimens of *neoxena* present certain characters which demand investigation. Allowing for normal variation only three of my ten specimens of *neoxena* are alike, while the remaining seven show either melanistic or albinistic markings or both combined. No. 167 (♂ im., Mich.) has several white feathers on the right tibia but is otherwise normal. The type (No. 2001, Fla.) has two entirely white feathers on the right flank. No. 44,087 (Fla.) has the abdominal region and flanks wholly chestnut without black. There are three pure white feathers on one side of the belly and five on the other; part of the anterior portion and the entire inside of the right tibia are white. No. 71 (♂ ad., Toronto) has conspicuous white patches on the abdomen, vent, and tibiæ. No. 44,088 (im., Fla.) presents the extreme of albinism; the abdominal region, breast, and tibiæ are almost wholly white, the outer primary of the left wing is entirely white, and white feathers appear on the bend of both wings and under wing-coverts. No.

29,289 has the abdominal region and breast black slightly tinged with chestnut and with one or two white feathers on either side of the belly. The left tibia (the skin on the right is wanting) is chestnut and black with white filoplumes. The chestnut on the median coverts is much reduced. No. 44,086 (♂, Fla.) is almost completely melanistic. The abdominal region is wholly black with the exception of two pure white feathers on either side of the belly. The tibiæ are smoky brown the inner side of the right one being white. The foreneck is black washed with dull chestnut, the wing-coverts are glossy black with no trace of chestnut.

This remarkable variability will be more fully appreciated by an examination of the following table: —

No.	Abdominal Region.	Tibiæ.	Remarks.
167	Mixed chestnut and smoky brown.	Like abdomen but right with white feathers.	
2001	Mixed chestnut and black; two white feathers on right flank.	Like abdomen.	
44087	Chestnut with eight white feathers.	Chestnut, right partly white.	
71	Mixed chestnut, black and white.	Like abdomen.	
44088	White with a few chestnut and brownish feathers.	Front white, back smoky brown.	Outer primary of left wing and some feathers of bend of wing and under wing-coverts white.
29289	Black tinged with chestnut; three white feathers on belly.	Chestnut and black.	Wing coverts black tinged with chestnut.
44086	Black with two white feathers.	Right smoky brown, left smoky brown and white.	Foreneck black washed with chestnut. Wing-coverts glossy black.

While I do not pretend to explain this unusual degree of variation, I can see no reason for making it the basis of a theory that *neoxena* is a color-phase of *exilis*. Only three of the fourteen known specimens depart widely from what is evidently the type of coloration, and in every instance these differences are due to albinism or melanism, not one of the specimens showing any approach to *exilis*. Nor do the known cases of dichromatism among Herons give us any ground for asserting that *neoxena* is a dichromatic phase of *exilis*. Aside from the important differences exhibited by the young and female, a careful comparison of the adult males shows no substitution of colors such as we find in the phases of *Ardea rufescens*, *Megascops*, *Fulmarus*, or even *Stercorarius*. This is especially marked in the under parts, which in *exilis* are essentially all buffy, while *neoxena* has a chestnut forneck, a chestnut and black belly, and, in every instance, jet black under tail-coverts.

It is natural that the variability of *neoxena* should cause us to regard it with suspicion, but beyond the fact that the two birds are generically related and of the same size, there is not one grain of evidence implicating *exilis*. This latter bird is represented in our collections by hundreds of specimens not one of which has given reason for believing the species is dichromatic.

For the loan of specimens of this rare bird I desire to heartily thank Messrs. William Brewster, J. H. Ames, Charles B. Cory, J. H. Fleming, Jas. R. Thurston, and L. W. Watkins.

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1886. CORY, CHARLES B. More news of *Ardetta neoxena*. Auk, III, 408. Gives collector's name and approximate place of capture of the type specimen.

1886. COUES, ELLIOTT. Key to North American Birds. Third Edition. Appendix, 888.
Description of *Ardetta neoxena*.

1889. RIDGWAY, ROBERT. Manual of North American Birds, 127.
Description of *Botaurus neoxenus*.

1889. A. O. U. COMMITTEE ON NOMENCLATURE. First Supplement to Check-List of North American Birds, p. 6.

Ardetta is here ranked as a subgenus of *Botaurus* and the species is therefore recognized as *Botaurus neoxenus*.

1889. SCOTT, W. E. D. A second specimen of Cory's Bittern (*Botaurus neoxenus*). Auk, VI, 317.

Records the capture near Lake Okeechobee of the second known specimen.

1891. CORY, CHARLES B. Capture of a Fourth Specimen of *Ardetta neoxena*. Auk, VIII, 309.

Records an adult male from the Kissimmee River, Florida. The capture of the third known specimen herein referred to was not published until 1892.

1891. SCOTT, W. E. D. Notes on the Nest and Habits of Cory's Bittern (*Botaurus neoxenus*). Auk, VIII, 309.

Records the discovery, June 8, 1890, by J. F. Menge, of a nest containing four young on the borders of Lake Flirt, a small lake west of Okeechobee.

1892. SCOTT, W. E. D. A Description of the adult male of *Botaurus neoxenus* (Cory), with Additional Notes on the Species. Auk, IX, 141.

Records the capture of three birds by J. F. Menge near Lake Okeechobee. It is suggested that *neoxena* may prove to be a color-phase of *exilis*.

1892. SCOTT, W. E. D. Notes on the Birds of the Caloosahatchie Region of Florida. Auk, IX, 214.

"*Botaurus neoxenus*" is stated to occur regularly, though probably in small numbers, about Lake Flirt and in the great tracts of sawgrass that surround Lake Okeechobee.

1892. CROSS, W. A new Species for Ontario. Proc. Ornithological Subsection Canadian Inst., for 1890–91, 41.

Records the capture, on May 18, 1890, of the first known Toronto specimen.

1893. A. O. U. COMMITTEE ON NOMENCLATURE. Fifth Supplement to the American Ornithologists' Union Check-List of North American Birds. Auk, X, 61.

Ardetta is restored to full generic rank, *Botaurus neoxenus* thus becoming *Ardetta neoxena*.

1893. BROWN, HUBERT H. Capture of another *Ardetta neoxena* at Toronto, Ontario. Auk, X, 363.

Records a female taken May 20, 1893.

1893. BREWSTER, WILLIAM. Capture of another *Ardetta neoxena* at Toronto. Auk, X, 364.

Comparing the specimen recorded by H. H. Brown with the four Florida specimens in his collection. It is stated to agree closely with No. 44,087.

1894. SHARPE, R. BOWDLER. [The Geographical Distribution of the Little Bitterns (*Ardetta*)]. Bull. Brit. Orn. Club, XXI, xxxi; reprinted in The Ibis, July, 1894, 425.

The writer states that "*Ardetta neoxena* of Cory seems to be founded on very old individuals of *A. exilis*, in which the rufous tips to the quills and the light stripes on the back have disappeared with age or wear"!

1894. AMES, J. H. Third Specimen of *Ardetta neoxena* taken at Toronto. The Biological Review of Ontario, I, 52.

Records the capture of a male on May 26, 1894.

1894. MCILWRAITH, THOMAS. The Birds of Ontario, Second Edition, 109.

Botaurus neoxenus described with comment on the Toronto specimens.

1894. PICKERING, CHARLES. Fourth Specimen of *Ardetta neoxena* at Toronto. The Biological Review of Ontario, I, 54.

Records a specimen taken July 16, 1894.

1894. BRODIE, WILLIAM. Fourth Specimen of *Ardetta neoxena* at Toronto. The Biological Review of Ontario, I, 54.

Description of the specimen collected by Mr. Pickering with references to previously published records of this species.

1894. THURSTON, JAMES R. *Ardetta neoxena* at Toronto. The Biological Review of Ontario, I, 84.

Records an adult male taken August 16, 1894.

1894. FLEMING, JAMES H. *Ardetta neoxena* at Toronto. The Biological Review of Ontario, I, 85.

Records an immature bird taken August 17, 1894.

1894. AMES, J. H. *Ardetta neoxena* at Toronto. The Biological Review of Ontario, I, 86.

Records an immature male taken August 24, 1894.

1894. BROWN, HUBERT H. Notes on Cory's Bittern (*Ardetta neoxena*), and a comparison of the seven Toronto specimens. The Biological Review of Ontario, I, 86–91.

An important paper describing the locality in which all the Toronto specimens were taken, giving notes on their habits and food and comparisons of their plumage.

1895. WATKINS, L. WHITNEY. Cory's Least Bittern in Michigan. Auk, XII, '77.

Records a male from Jackson County, taken August 8, 1894.

1895. CHAPMAN, FRANK M. Handbook of Birds of Eastern North America, 131.

Ardetta neoxena described and the suggestion that it may prove to be a color-phase of *A. exilis* endorsed.

LIST OF RECORDED SPECIMENS OF *Ardetta neoxena*.

No.	*Collection of.*	*Locality.*	*Sex and Age.*	*Date.*	*Collector.*
2001	Field Columbian Mus.	Near Lake Okeechobee, Fla.	[♂ ad.]	[1835]	R. T. Stewart.
29289	William Brewster.	" " " "	[♂ ad.]	July 9, 1889	J. F. Menge.
——[1]	?	Kissimmee River.	♂ ad.	May 19, 1890	R. C. Stewart.
——[1]	Canadian Institute.	Toronto, Ont.	——	May 18, 1890	W. Cross.
44086	William Brewster.	Near Lake Okeechobee, Fla.	♂ ad.	June 28, 1891	J. F. Menge
44087	" "	Lake Flirt.	[♀ ad.]	July 15, 1891	J. F. Menge.
44088	" "	" "	Im.	Aug 15, 1891	J. F. Menge.
1326[1]	J. H. Fleming.	Toronto, Ont.	♀ ad.	May 20, 1893	J. Ramsden.
——	J. H. Ames.	" "	♂ ad.	May 26, 1894	— Jacobs.
——[1]	Chas. Pickering.	" "	♀ ad.	July 16, 1894	Chas. Pickering.
71	Jas. R. Thurston.	" "	♂ ad.	Aug. 16, 1894	— Hume.
1000	J. H. Fleming.	" "	♂ im.	Aug. 17, 1894	H. Day.
——	J. H. Ames.	" "	♂ im.	Aug. 24, 1894	P. Jacobs.
167	L. W. Watkins.	Watkin's Lake, Mich.	♂ im.	Aug. 8, 1894	L. W. Watkins.

[1] Not examined.

AN IMPORTANT FACTOR IN THE STUDY OF WESTERN BIRD-LIFE.

BY CARL F. BAKER.

PROBABLY no better instance of the progressiveness of the American can be offered than that of the settlement of the arid lands of the Western States. Through the magic touch of irrigation a desert has been made to support a vegetation of almost tropical richness. Where once was but a barren plain, now spread broad fields of luxuriantly growing crops, fine orchards, and green meadows.

It would seem that in this wonderful transformation, brought about in so short a time, the zoölogist would find a field of surpassing interest for study, and one promising varied and valuable results. How it has affected the buffalo, antelope, elk, and badger are familiar facts. But its effects on the smaller mammals and birds have never been traced, although they must in many instances be nearly as marked as on those species mentioned. Compare for an instant the two sets of conditions. *Then*, a treeless, uninhabited tract (except along the streams which were few and far between) covered with a very scant herbaceous vegetation, upon which fell but very little rain. *Now*, covered with farms having ornamental trees and orchards in abundance, the face of the country not gray brown, but green, and water everywhere. These changes have been effected over immense tracts within a very few years, and are going on rapidly to-day.

It seems as if here was an opportunity such as occurs but once in an age. It is true that similar changes are in progress in all inhabited countries, but in no instance have changes on so grand a scale been brought about in so short a time. With a single exception, in none of the literature at my command can I find that such studies have been carefully prosecuted. This exception is an article by Dr. H. H. Behr (Proc. Calif. Acad. Sci., Vol. I), entitled 'Changes in Fauna and Flora of California.' Ornithological literature is full of specific instances of variation of habit produced by the settlement of the country, such as those of the Phœbe, Martin, Barn Swallow, and others. But I cannot find

that such a faunal study as I have mentioned, embracing any extended area, has ever been made.

In a recent article in 'The Auk' (Vol. XII, 'The Summer Range of Colorado Birds') Prof. Cooke ignores any such element as this in the study of Colorado birds, and for this reason he may describe anything but a natural state of affairs. For instance, the present status of the Western Meadowlark, Mourning Dove, Say's Phœbe, and Bullock's Oriole, in the Cache la Poudre Valley, must of a necessity be very different from what it was forty years ago, when nothing existed there to modify the natural distribution of the species. Thus it is entirely possible that Prof. Cooke's statement that "there is a greater variety of birds among the foothills, but not so many individuals as on the plains," may represent only an artificial condition. To describe the range of an animal like the buffalo, which occurred in immense numbers over a large part of the United States, as "very rare, occurring in small herds of some half a dozen individuals each, in remote fastnesses of the Rocky Mountains," would be but illy describing the life and distribution of the hordes of the plains.

At some few localities investigations have been carried on to determine the primitive and natural distribution of birds in our desert regions. But these regions are not now being irrigated and probably never will be. Studies should be prosecuted now in those regions liable to irrigation. It is from these as a basis that exact comparisons can be drawn in future years, and exact values given of effects produced by such tremendous surface changes as those occasioned by irrigation and the settlement of the arid region.

THE PINE GROSBEAK IN CAPTIVITY.

BY O. W. KNIGHT.

THE winter of 1892-93 will be long remembered by Maine ornithologists on account of the great number of Pine Grosbeaks (*Pinicola enucleator*) which visited this State. November 16, 1892,

I noticed two or three individuals feeding on seeds of the white ash near Orono, Maine. December 25 a flock of about two hundred individuals appeared in the yard of a friend in Bangor and began to feed upon the seeds of crab-apples of which a large quantity remained on the leafless trees in his yard. He at once sent word to me, and I was soon on the spot. I determined to catch a pair of the birds and see if they could be induced to breed in captivity.

A horse hair slip noose was speedily arranged at the end of a bean pole, and with this crude apparatus I essayed to capture the birds, which were very tame. They would sit quietly engaged in feeding, while I slipped the noose over one's head, and hauled it from its perch on the tree. The remainder of the flock did not seem to take any notice of the queer antics of their captured comrade, which uttered loud, harsh cries when handled while the noose was being removed from its neck. In this way about twenty females and young males were captured, but the handsome adult males were more wary and remained near the top of the tree, so that it was impossible to capture any of them.

After a careful scrutiny of the captives, I selected two likely looking ones which by sheer luck turned out to be a pair. My friend also selected a couple of the birds, and the remainder were set free. My pair of birds were placed in a large cage in our kitchen, where they would become accustomed to seeing persons near them, and they quickly became very tame. The next day after their capture, the male began to sing in a low ventriloquial voice which seemed to come from an entirely opposite direction from where he was.

In a few days they would eagerly take apple and hemp seed from my hand, and very soon I would allow them to come out of their cage and fly about the room. When I desired to get them into their cage again, a few seeds placed near the door at once enticed them within.

The male quickly assumed the ascendency, and did not allow the female to partake of any proffered dainties until his own appetite was satisfied. The second week in May he showed indications of pairing, and nesting material was put in the cage. Both birds would carry this around the cage in their beaks, but did not seem to know how to begin to build a nest. May 30, the

male was found dead in the cage. Notwithstanding this, the female continued preparing to lay, and the morning of June 10 an egg was found in the bottom of the cage. June 11 a second and last egg of the set was laid. They were of a greenish blue color, spotted with black and lilac. The spots were thickest at the larger end where they tended to become confluent and form a wreath. The eggs measured 1.00 × .68 and 1.02 × .64 inches respectively.

The next winter, 1893–94, no Grosbeaks were observed in this vicinity, and so I was disappointed in getting a mate for my bird. The last of May, 1894, she showed signs of desiring to build a nest. An old nest of the Loggerhead Shrike was placed in a box in her cage, and she at once occupied herself in tearing it to pieces and attempting in a crude way to build a nest. On June 9, 14, 17, 22, and 23 she deposited eggs which exhibit the following dimensions: .90 × .69, .94 × .70, .95 × .68, .90 × .65, and .90 × .69. On completion of this set she desired to incubate, acting very much like a sitting hen. In July she again began to prepare a nest, and on July 17 and 18 she laid eggs which measure .81 × .64 and .86 × .62 in.

January 17, 1895, a few Grosbeaks were observed feeding on some sumach berries in a small grove near Bangor. February 2 a flock of about twenty visited a crab-apple tree in a neighbor's garden, and, although they were very wild, I finally managed to capture one which proved to be a young male. He was at once introduced to the captive female, but the two developed a strong antipathy to each other, and a fierce fight ensued, so that I was obliged to place them in separate cages.

May 20 the female began to build a nest, and I again tried to mate the birds, but they at once began to attack each other, so I was obliged to give up all hopes of their mating.

On May 28, 29, and June 5, 6, and 7 eggs were deposited which measure .92 × .69, .83 × .66, .93 × .71, .88 × .70, and .88 × .69 in., and the female at once desired to incubate. June 11 the bird began to construct another nest, and on June 14, 15, 22, and 24 she again laid. The eggs measure .99 × .70, .86 × .67, .95 × .70, and .64 × .57 in. The last egg laid was very small and contained no yolk. The bird now ceased laying until July, when on

July 10, 11, and 12 she laid eggs measuring .93 × .69, .94 × .68, and .88 × .69 in. I now supposed that she was through with her remarkable production of eggs, but to my astonishment on July 25, 26, and 27 she again laid, the eggs measuring .93 × .67, .89 × .64 and .90 × .65 respectively. This ended the production of eggs for this year. In August I tried to put the male in the cage with the female, and this time they managed to get along without quarreling, and have been kept in one cage ever since.

It was very interesting to observe the moulting of the male, and see him gradually take on the adult plumage. July 20 a few orange colored feathers could be observed on his head near the base of the bill; these gradually grew until on August 1, his drab colored head feathers were all replaced by orange colored ones. July 25 a few orange feathers were noted on his throat, and these grew and replaced the old ones until on September 5 the moult was completed. The feathers of the head, throat, etc., are of a peculiar orange color instead of the beautiful red hue which characterizes the wild birds of the same sex.

DESCRIPTIONS OF AN APPARENTLY NEW SPECIES AND SUBSPECIES OF PTARMIGAN FROM THE ALEUTIAN ISLANDS.

BY D. G. ELLIOT, F. R. S. E.

Plate III.[1]

DURING a late visit to Washington my friend Mr. R. Ridgway kindly allowed me to examine the extensive series of Ptarmigan in the collection of the National Museum with permission to describe any novelties I might discover, and the two apparently new forms named in this paper are the results of my investigations.

[1] The publication of this plate is necessarily deferred till the July number.

Lagopus evermanni, sp. nov.

Habitat, Attu Island.

Adult male, Attu Island, 4th June, 1894.— Forehead white. Top of head and back of neck black, finely barred with tawny. Loral space, breast and entire upper parts, tertials, innermost secondaries, and upper tail-coverts black, with faint vermiculations of russet on rump, upper tail-coverts and edges of tertials. Sides of face black and white mixed. Comb over eye, scarlet. White feathers of the winter dress are interspersed among the feathers of the back and upper part of the breast. Most of wing-coverts, secondaries, and entire primaries pure white, with the shafts of primaries pale brown. Tail clove brown, almost black, with narrow white tips to the feathers. Entire under parts, including under tail-coverts, pure white. Bill and claws, black. Total length, 13.90 inches; wing, 7.50; tail, 5.30; tarsus, 1.30; exposed culmen, .50.

This specimen is not in complete summer dress, as is shown by the few remaining white feathers, scattered among the black ones, and also by the white forehead. These feathers would undoubtedly give place to others colored like those of the adjoining parts.

Adult female, Attu, 28th May, 1892.— Entire plumage of body ochraceous, palest on the throat, blotched and barred on the back with black and the feathers with white tips, while the feathers of rump and upper tail-coverts have ochraceous tips. On the breast and flanks the black blotches are much fewer but the black bars are broader, and there are no white tips on the breast feathers, but those on the abdomen and some on the flanks are broadly tipped with white. Under tail-coverts ochraceous barred with black. The tertials, inner secondaries and some of the greater wing-coverts ochraceous like the back, barred and tipped with white; remainder of wing and primaries pure white with the shafts of the latter pale brown. Bill and claws black. Total length, 12.80 inches; wing, 6.60; tail, 4.90; tarsus, 1.30; exposed culmen, .60.

Seven specimens, five males and two females, from Attu, one of the Near Island Group, brought by Prof. B. W. Evermann, Mr. C. H. Townsend, and Dr. S. I. Call, are all the representatives of this new species yet obtained. Of the Rock Ptarmigans of the Northwest, *L. evermanni* is apparently nearest allied to *L. rupestris nelsoni* of Unalaska and the Shumagin Islands, but is distinguished at once from all the Ptarmigans of the Western Hemisphere by its entire black and white plumage, exhibiting a strong contrast to *L. r. nelsoni* with its russet coloration. The female, while having a general resemblance to that of *L. r. nelsoni*, which is to be expected, as the females of most

Rock Ptarmigans are similar in appearance, presents differences in color and style of markings that cause it to be readily recognizable from all its relatives, the black predominating to such an extent in the hues of the plumage as to make her appear much darker than the female of any other species.

Attu Island is about 1400 miles west of Unalaska, and between these points only two forms of Ptarmigans have been procured,—*L. r. atkensis* and the subspecies *L. r. townsendi* described farther on, both very different in all respects from *L. evermanni*, and there are no opportunities for intergradation, the habitats of the different forms being islands and too far separated by extent of sea, while *L. atkensis* and *L. r. townsendi*, to be described later, preserve their peculiar general characteristics and individual distinctness throughout their range. The males of *L. evermanni* bear a certain resemblance to specimens of *L. mutus*, of the Eastern Hemisphere, where these have much black in their plumage; but between Attu and the continent of Asia is found *L. ridgwayi*, a very distinct form from Bering Island, about 300 miles west of Attu. This would seem to bar any possible relationship between *L. evermanni* and any continental species, though it is a surprising fact, and one that can only be theorized upon and not thoroughly explained, that species which are closely allied can be separated by many miles of sea and land, and yet retain their specific characteristics, though distinctly different species may be found occupying interlying territory. This is one of the curiosities of geographical distribution, the solution of which is probably beyond the power of man to fathom.

It gives me much pleasure to bestow upon this new species from Attu Prof. Evermann's name, as he was the first to bring this Ptarmigan to the notice of naturalists.

The other new form I propose to name

Lagopus rupestris townsendi, subsp. nov.

Habitat. Kyska and Adak Islands, Aleutian Chain.

Adult male. Kyska Island, 8th June, 1894, Nat. Mus. No. 135,634, type.—The general color of the entire upper parts, including head and neck, together with the breast and flanks, raw umber with a tinge of russet, finely vermiculated with black on lower back and rump, more coarsely marked

on the other parts, with black blotches on the head, neck, upper part of back and wings; feathers of back, rump and wings tipped with white. Some of these white tips are finely spotted with black, giving them a gray appearance. The outer secondaries, tertials, and most of the wing-coverts and primaries, pure white, the last having black shafts. The long upper tail-coverts are marked and colored like the back, with white tips. Tail clove brown, nearly black, the feathers tipped with white, broadest on the median, decreasing towards the outer ones, where it is either hardly perceptible or absent altogether. Throat white, mixed with a few colored feathers. Breast, sides of neck, and flanks ochraceous, barred with black, the bars broader and more conspicuous on neck. Abdomen and belly white. Under tail-coverts mummy brown barred with black. Loral space and ring around the eye black, and a scarlet comb above the eye. Sides of neck of a slightly paler hue than back or breast. Total length, 13.70 inches; wing, 7.50; tail, 4.00; tarsus, 1.50; exposed culmen, .50.

Adult female, Kyska, 8th June, 1894, Nat. Mus. No. 135,636, type.— Entire upper parts, including scapulars, tertials and upper tail-coverts ochraceous blotched and barred with black, most of the feathers tipped with white, except those on hind neck which are tipped with ochraceous. Tail square, clove brown, the four median feathers tipped with white. Secondaries, wing-coverts, and primaries white with black shafts, except those of inner secondaries which are white. Throat white. Breast, sides of body, and under tail-coverts ochraceous buff, lighter than the back, and broadly barred with black. Center of breast, abdomen, and belly pure white. Thighs and tarsus covered with white feathers. Bill and claws black. Total length, 12.50 inches; wing, 6.90; tail, 4.40; tarsus, 1.20; exposed culmen, .50.

Adult male, Adak Island, 4th July, 1893, Nat. Mus. No. 131,874.— Upper parts grayish wood-brown finely vermiculated with black, and having occasional black blotches, with generally subapical narrow black bars on the feathers, and white tips. The head and hind neck are more of a fulvous hue, and the black bars are very narrow. The breast is fulvous finely vermiculated with black, and with narrow black bars, the tips of the feathers being usually buff. The general appearance of the males in this month is more grayish with finer black lines and vermiculations.

Adult female, Adak, 4th July, 1893, Nat. Mus. No. 131,878.— There is not much difference upon the back of the female in this month, except there is apparently more ochraceous on the tips of the feathers in the median line and on the rump, with a tendency to grayish on the scapulary region. The under parts differ in being uniformly rich buff with much narrower black bars than is seen in the June birds, and with the exception of an occasional white feather in the abdominal region, there is no white anywhere. This seems to be the full summer dress, and at once attracts the attention of the observer by the narrowness of the black lines and absence of white.

There are about twenty specimens of both sexes of this subspecies in the collection, taken in June on the island of Kyska and in July on Adak. The first of these lies in about 183° west Longitude and the latter in about 177°. There is a slight difference in the appearance of the birds from the two localities, and this can be attributed possibly somewhat to the difference of date in their capture, the Adak birds having been obtained one month later, but more to their geographical distribution, as Adak is several hundred miles east of Kyska, and the birds' environment has produced a different result upon them but one, not yet sufficiently pronounced to establish even a subspecific form. It will be observed that the male — and this example agrees with all the others taken at the same time — has much finer vermiculations, giving the back a slightly grayish hue, and the conspicuous black bars on the neck of the Kyska birds have been reduced to very narrow bars or vermiculations, and the general plumage presents a much more delicate pattern. The female shows even more striking changes. The back is decidedly grayish about the tips of the feathers, and the entire under parts are ochraceous buff, narrowly barred with black; the white on the breast, abdomen, and belly having entirely disappeared, only an occasional white feather showing here and there. The entire throat is a pure light buff. The specimen appears to have assumed a complete summer dress.

It is very evident that comparisons of Ptarmigans should be made between individuals not only from the same locality, but also taken in the same month, if possible the same day, for these perplexing birds being in a constant state of moult, a few days' difference in the time of their capture exhibits much change in their appearance, and one who has not studied them carefully with sufficient material, could easily be led to form an erroneous opinion regarding the status of a subspecific or even a specific form. As the birds from Atka and the two islands Kyska and Adak are spread before one, the differences between those of the first and the last two localities are so distinguishable and marked that the most careless observer would be able to detect them, and after a little investigation to separate them without hesitation even if they were mixed indiscriminately together, the Atka birds being

lighter in general hue and without the black blotches on the upper parts so conspicuous in the examples from the other islands. It is not, however, always easy to cause a description of allied forms among Ptarmigans to bring to one's mind any one of them with the clearness and unfailing accuracy that even one glance of the eye is capable of producing, and the doubter then, who has no access to the specimens, must form his opinion either mainly in the 'dark' or wait until access to sufficient specimens will enable him to comprehend thoroughly their differences.

I have conferred upon this subspecies the name of Mr. C. H. Townsend of the United States Fish Commission, who has brought many specimens of Ptarmigans from various islands in the Aleutian Chain.

SONGS OF THE WESTERN MEADOWLARK.[1]

BY L. BELDING.

THESE songs of the Western Meadowlark (*Sturnella magna neglecta*) were copied at Gridley, California.

Numbers 1 and 2 are good examples of superior articulation. The pitch of No. 9 is uncertain, but that of the others is correct, or nearly so.

These twelve songs are selections from the best songsters. I have heard these songs many times, and have heard them sung imperfectly oftener than otherwise.

I have heard more *writeable* songs from this bird at this locality than at any or all places where I have been in this State, and I have always noticed the songs wherever I have been.

[1] For musical notations of songs of the Western Meadowlark as heard in Colorado, see Charles N. Allen, Bull. Nutt. Orn. Club, VI, 1881, pp. 145–150; as heard in Manitoba, see Ernest E. Thompson, Amer. Mag., April, 1887 (republished in Proc. U. S. Nat. Mus. XIII, 1891, pp. 575–579).— EDD.

No. 1.

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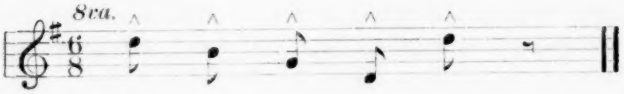
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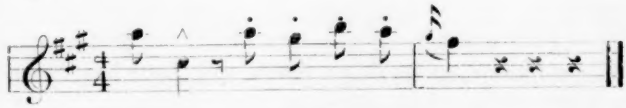
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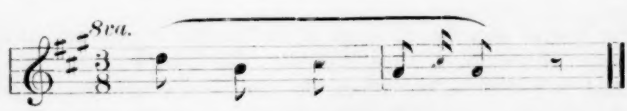
No. 11.



No. 12.

A NEW SUBSPECIES OF THE GENUS *DRYOBATES.*

BY A. W. ANTHONY.

SOME time since in looking over a series of western *Dryobates* of the *harrisi-hyloscopus* group, my attention was attracted by a number of specimens that seemed to belong to none of the recognized geographical races of *villosus*, and the difference was such as to warrant the supposition that a third western race eventually would have to be separated from *hyloscopus*, to which form it seems to have been very generally assigned. In order to ascertain how constant the supposed characters might be, and to improve our somewhat unsatisfactory knowledge of the western Woodpeckers of this group, a series has been brought together representing nearly all of the important parts of the habitat of *hyloscopus*. About one hundred specimens have been examined, over half of which are in my own collection. The mountains of Montana, Idaho, Wyoming, and Utah are represented by a series kindly loaned me by Dr. C. Hart Merriam. Unfortunately I have been unable to secure any specimens from Nevada, but other parts of the West and Southwest are represented in most cases by a good series. As long ago as 1888 Mr. William Brewster called attention to a difference in size between northern and southern specimens of *hyloscopus* (Auk, Vol. V, p. 252) and suggested that it might in time seem advisable to separate them. The types of *hyloscopus* were taken at San José, Cal., so it is from that part of the coast that we must look for specimens on which to base our investigations. I can see no constant difference in size between a series from this region and skins from Lower California (San Pedro Martir) or the northern part of the range of the subspecies. There is considerable individual variation both as to size and to purity of the white of the lower parts, and the series from the peninsula averages a little smaller than my skins from the central part of the State. There is one character, however, that seems to be rather constant in the series from Lower California that is not found in the northern skins to any extent. Ten of the twelve skins before me from San Pedro Martir have the lores black, the white superciliary stripe being separated from the smoky white nasal tufts by the

black of the crown. Two show whitish lores, a character belonging to *hyloscopus* and *harrisi*. Only one of my skins from central California shows blackish lores. I would not, however, attempt to separate the southern bird upon this rather unstable character.

The series from the Rocky Mountain region is quite easily separated from California specimens and constitutes a well-defined geographical race for which I can find no name available, and propose to separate from *hyloscopus*, to which race it has heretofore been assigned, to be known as

Dryobates villosus montanus, subsp. nov. ROCKY MOUNTAIN WOODPECKER.

Subsp. Char.— Differing from *hyloscopus* by larger size, much more purely white lower parts, and in having the lores chiefly or entirely black as in *villosus*.

Description of type, No. 3625, coll. A. W. A. Boulder County, Colorado, December 27, 1892.— Above black, dorsal stripe pure white, outer webs of primaries spotted with white as in *harrisi* and *hyloscopus;* occiput with red patch common to the group; lores chiefly black, with white superciliary stripe, separated from the basal tufts by the glossy black of the pileum; nasals white lined with black; below pure white. Wing, 135; tail, 105; tarsus, 18; bill from nostril, 30; depth of bill, 8 mm.

Habitat, Rocky Mountains from New Mexico to Montana, West to Utah (Uintah Mountains).

From reference to the measurements it will be seen that the present race is fully the equal in size of *leucomelas*, and considerably larger than either *harrisi* or *hyloscopus*. It is distinguished from *leucomelas* at a glance by its usually unspotted wing-coverts and tertials. That it intergrades with *leucomelas* is shown by a specimen from Salmon River, Idaho, and one from Summit, Montana, both of which have the wing-coverts and tertials somewhat spotted and are intermediate between *montanus* and *leucomelas*. A specimen from Wind River Mts., Wyoming, Aug. 29, and one from Big Snowy Mts., Montana, Aug. 25, in the series from the Department of Agriculture, are directly referable to *leucomelas* and would indicate the race to be a resident in those localities. Only one of the skins from Colorado has the wing-coverts noticeably spotted and the measurements of this specimen place it with the eastern *villosus*.

MEASUREMENTS OF *Dryobates villosus harrisi, D. v. hyloscopus.* AND *D. v. montanus.*

	Dryobates villosus harrisi.						*Dryobates villosus hyloscopus.*						*Dryobates villosus montanus.*					
	6 males.			4 females.			15 males.			10 females.			10 males.			9 females.		
	Average.	Maximum.	Minimum.	Average.	Maximum.	Minimum.	Average.	Maximum.	Minimum.	Average.	Maximum.	Minimum.	Average.	Maximum.	Minimum.	Average.	Maximum.	Minimum.
Wing.	128.16[1]	133	125	125.5	127	122	121.	129	120	121.5	126	115	132.2	136	129	128.45	135	124
Tail.	94.85	104	83	95.25	102	91	92.75	98	87	92.3	98	86	101.75	107	93	96.45	102	91
Tarsus.	23.66	25	23	21.5	23	20	21.66	24	18	21.	22	20	22.6	25	18	21.66	23	21
Bill from Nostril.	26.6	29	23	25.	25	25	24.03	29	23	22.7	23	21	28.35	30	27	24.40	26	23
Depth of Bill.	7.6	8	7	7.5	8	7	7.9	9	7	7.2	8	6.5	8.27	9	8	7.75	8	7

[1] All measurements in millimeters.

From the series of *hyloscopus* examined I would not consider that it is ever "pure white" below, though always much nearer white than *harrisi*. There is always a slight smoky brown or soiled appearance to the plumage of the breast and belly, quite noticeable in contrast with the Rocky Mountain race. I have never seen a specimen from California that I should call typical *harrisi*, though a few of the more northern skins are rather near that race, and a specimen from Lake County, California (Barrett Mt.) is much nearer *harrisi* than *hyloscopus*.

The habitats of the three western races might be maped as follows:

Dryobates villosus harrisi.— From British Columbia south to northern California (Barrett Mt.).

D. villosus hyloscopus.— California south to San Pedro Martir Mts., Lower California, east to Chiricahua Mts., Arizona.

D. villosus montanus.— Northern New Mexico, north to Montana and Idaho. Utah (Uintah Mts.).

DESCRIPTION OF A NEW JAY FROM MEXICO.

BY GERRIT S. MILLER, JR.

AN undescribed Jay collected by Mr. W. B. Richardson in the mountains near Bolaños, Jalisco, Mexico, in February, 1889, differs in many ways from *Aphelocoma couchi* Baird, its nearest relative. It may be called

Aphelocoma gracilis, sp. nov.

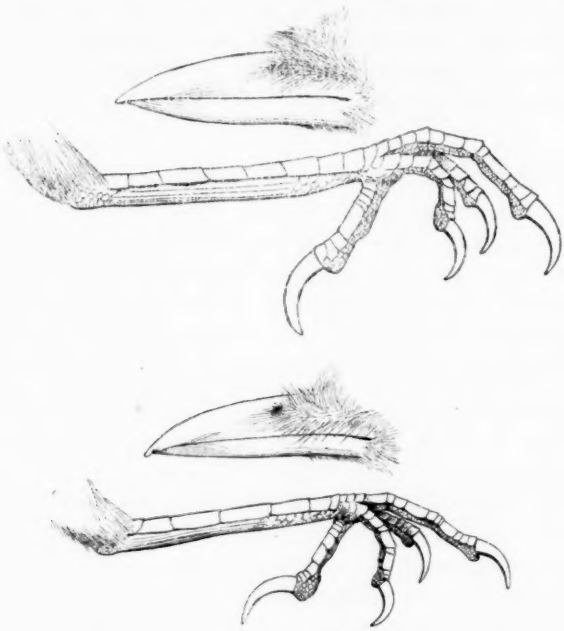
Sp. Ch.— A little smaller than *Aphelocoma couchi* Baird and with disproportionately slender bill and weak feet; color throughout much grayer than in *A. couchi*.

Adult male (Type No. 5658, collection of Gerrit S. Miller, Jr., Sierra Bolaños, Jalisco, Mexico, February 26, 1889. W. B. Richardson collector): Back smoke gray faintly tinged with blue; rump, upper tail-coverts,

pileum, and sides of neck pale glaucous blue; cheeks and auriculars brownish slightly tinged with blue; wings blue of a shade somewhat darker than that of head, the flight feathers brownish on the inner webs and gray beneath; tail like wings, but the feathers showing faint transverse darker bars when held in certain lights, and blue extending over most of inner webs; whole ventral surface of body pale drab gray without trace of blue, darker across chest and on thighs, fading to dirty white on belly and crissum; feet and bill black, the latter marked with pale horn color at tip and along cutting edges from base to region about opposite nostrils.

None of the eleven specimens of *Aphelocoma couchi* that I have seen are near enough to *A. gracilis*, either in size or color, to cause any difficulty in distinguishing the two birds. The blue on the head, wings, tail, and upper tail-coverts is darker and much more intense in *A. couchi* than in *A. gracilis*, while in unworn specimens of the former the blue of the back is only just perceptibly dulled with gray. In the type, however, which was killed in April, the plumage is so much abraded that the color is much grayer than in fresh autumnal skins. The type of *A. gracilis*, taken in February, is apparently unworn, yet the back is noticeably grayer than in the type of *A. couchi*, and entirely different from fresh specimens of the latter. In *Aphelocoma couchi* the cheeks are either concolor with the pileum or so slightly tinged with brown as to make no strong contrast. In *A. gracilis*, on the other hand, the cheeks are noticeably browner than the pileum. The gray of the chest and thighs is in *A. couchi* always strongly tinged with blue (except in much worn specimens), while in *A. gracilis* it is entirely unmixed with this color. The bill of *A. couchi* varies considerably in shape, in immature birds appearing shorter and thicker than in the adults, but never approaches the weak slender bill of *A. gracilis*. In *A. couchi* the bill is entirely deep blue black except at the tip where it is pale horn color. In *A. gracilis*, on the other hand, the cutting edges from the base to near the middle are pale horn color like the tip. No trace of such marking can be seen in any of the specimens of *A. couchi*, although the series represents all ages from the adult to young not wholly moulted from the first plumage. The feet of the two birds differ greatly in size though not in the proportion of the various parts. The accompanying drawings show the

differences between the bills and feet of the two species. They were made by Mr. Frank Müller from the type of *A. gracilis* and an adult male *A. couchi*, the latter taken at Villar, San Luis Potosi.



Aphelocoma couchi is now known to range from Monterey, Nuevo Leon (the type locality), south to Zacatecas and central San Luis Potosi. Over this area the species is very constant in size and color. The more southerly specimens, however, are slightly larger than those taken farther north, while the largest in the series came from Jerez, Zacatecas. The fact that this specimen, taken at a point nearer the type locality of *Aphelocoma gracilis* than any of the others, differs most widely of all from the smaller bird is a strong argument in favor of the specific distinctness of the two forms.

My thanks are due to Mr. Robert Ridgway for the opportunity to examine the original specimens of *Aphelocoma couchi*; and to Dr. C. Hart Merriam for the use of the Jays in the collection of the United States Department of Agriculture.

MEASUREMENTS OF *Aphelocoma couchi* AND *A. gracilis.*

Aphelocoma couchi.

No.	LOCALITY.	Sex.	Wing.	Tail.	Tarsus.	Middle Toe.	Claw of Middle Toe.	BILL. Culmen.	From Nostril.	Depth through Nostril.	Ratio of depth to l'gth from Nostril
4113[1]	Monterey, Nuevo Leon.	♂ ad.	144	135	39	25	10	29	21.4	10	46.7
4112	" " "	♂ ad	149	136	—	24	10.5	30	22	11	50
372	Villar, San Luis Potosi.	♂ ad.	155	146	41	24	10	30	22.5	10.8	48
373	" " " "	♂ ad.	156	146	39	25	10	29	23	11	47.8
365	" " " "	♀ ad.	156	145	41	22.5	9.2	29	21	10.4	49.5
358	Mts. near Jesus Maria, San Luis Potosi.	♀ ad.	154	146	42	25.5	9.5	30	23	11	47.8
5659	Jerez, Zacatecas.	♂ ad.	162	150	41	22	9	27	19	10 2	53.7
371	Villar, San Luis Potosi.	♂ juv.	148	141	39.5	23.5	9.5	27.5	21	10	47.6
366	" " " "	♀ juv.	151	141	39	24.5	9.8	28	21	10.4	49.5
327	Mts. near Jesus Maria, San Luis Potosi.	♂ juv.	153	148	40	25.5	10.5	28	22	10.4	47.3
	Average of 5 adult males.		153.2	142.6	40	24	9.9	29	21.6	10.6	49.24

Aphelocoma gracilis.

5658[1]	Sierra Bolaños, Jalisco.	♂ ad.	146	138	33	21	8	27	20	8.8	44

[1] Type.

NESTING HABITS OF *PHAINOPEPLA NITENS* IN CALIFORNIA.

BY FLORENCE A. MERRIAM.

AT Twin Oaks, San Diego County, California, in the spring of 1894, I had unusual opportunities for studying Phainopeplas. Five or six pairs nested in the valley and collected to eat the berries of the pepper trees in my front yard. I counted as many as four males and two females on the trees at one time.

In feeding, the birds occasionally flew against a bunch of berries, as Chickadees do, clinging while they ate; and I once saw one hover before a bunch while eating, as a Hummingbird whirrs under a flower. More frequently they lit on a branch from which they could lean over and pick off the fruit at leisure. I never actually saw them eat anything but peppers, but at one time when the brush was full of millers, the birds seemed to be catching them; and they sometimes made short sallies into the air as if for insects. They did this much as a Kingbird does, flying up obliquely and going down the opposite side of the angle.

Their flight was interesting. In leaving the pepper trees to go back to their nesting ground, they uniformly rose obliquely high into the air,— sometimes, I should judge, as high as one hundred feet,— and then flew on evenly, straight to their destination, several pairs going so far that they would disappear up a side cañon, or, as black specks, would be lost in the fog down the valley. When watching the flight of Phainopeplas, Mourning Doves often passed close beside me, and I was struck by the contrast in motion. The Dove cut the air, swerving to one side as it flashed by, and its free whirling flight served to emphasize the calm, even rowing of the Phainopepla. Occasionally the birds flew in an undecided way, still high and even, but changing their direction by sudden jerks. Frequently, when nearing the nest tree, a male would close his wings and shoot obliquely down, tilting his tail for a brake. One of them used to fly in at a height of about ten feet, waver as he came near, as if slowing up, and then after turning his head to look down and place the nest, tilt down in the usual labored way, his tail pressing the air. Not

until he was nearly through building did he discover that it was easier to slow up in time to fly down to the nest.

I once saw an odd flight. The bird flew out horizontally with its high crest erect; the effect was very droll. Indeed, the Phainopepla's expression changes as much with the position of the crest as the Waxwing's does. Ordinarily the high crown gives the bird a dignified, distinguished air, but when lowered in anger it adds a sudden menace as he darts at his enemy.

In watching the birds at their nests, I found that they had a number of calls. The commonest was uttered in the same tone by both male and female, and was like the call of a young Robin. In giving it, they flashed their tails, showing the square corners conspicuously. The male also had a harsh cry of warning, drawn out like *ca-rack* or *ca-ra-ack*. In addition, he had a scold and a note suggesting the Meadowlark. The Phainopepla's ordinary song had some weak squeaking notes, but it also had phrases of rich blackbird quality, recalling the *o-ka-lee* of the marshes. One of these was a high keyed *whee'-dle-ah*. Other parts could be roughly syllabified as *kit-er-ah-at* and *cher-nack'-ee*. The song in flight was bright and animated. I once heard a bird break out as he came down from a sally into the air, and he often flew away from the nest singing. Sometimes I thought he even sang in the nest. Of the other birds heard when listening to the Phainopepla, none were so common as the Wren-Tit (*Chamea fasciata henshawi*) and there could be no sharper contrast than that between the slow, distinct, descending scale of the Wren-Tit and the rapid runs and jumbled notes of the Phainopepla. Dr. Coues speaks of the evening song as a 'requiem,' and Professor Evermann dwells upon its plaintive quality. As I never watched the birds at dusk, I never heard this song, but the character of the day songs was markedly cheerful. Indeed, to me the Phainopepla's song was pleasing in spite of its jumbled notes, not merely because of the flute-like quality of some of its tones, but pre-eminently because of the bright, vivacious way in which it was uttered. However, with these general characters, even in the day time the song varied greatly, ranging from the soft lay which the bird warbled to himself as he sat in the sun to the rich and tender musical outburst with which he greeted his mate.

By following the birds as they flew from the pepper trees, I found four nests. They were all on the border or in the midst of dense chaparral. The valley had been almost cleared of brush and planted to grain, orchards and vineyards; but the desert-loving Phainopepla went back into the brush at the foot of the hills. One 'island' of brush was left in the middle of the rich valley, and this attracted them strongly. I found two of their nests there and suspected three. Of the four that I did find, all were built in low oaks, two not eight feet above the ground, and two under five. One was in a narrow socket between two small branches, and another was placed on a horizontal limb. All the nests were broken up, and the three that I took after they were deserted were made of about the same materials: small bits of plant stems, oak blossoms and other small flowers. The materials were so fine that, although I sat within a few yards of the nests when the birds were at work, I rarely saw them bring anything, except in the few instances when they came with grass dangling from their bills.

As soon as I began to watch the Phainopepla's nests, I discovered that the males did almost all the building. This was especially surprising because in direct opposition to the laws of protective coloration, for their black plumage and white wing markings made them striking figures as they went about their work. On the other hand, the dull colors of the females toned in admirably with the gray brush in which the nests were situated. Moreover, their plumage was most inconspicuous with the sun on it, and in the low brush where the nests were, the sun beat down constantly.

I saw three pairs of birds building, and in each case the males were doing most of the work. Two of the nests I studied closely, watch and note-book in hand, in order to determine the exact proportion of work done by each bird. The appended tables show the results. One nest was watched two hours and a half, during a period of five days, in which time the male went to the nest 27 times; the female, only 3. The other nest was watched 7 hours and 35 minutes, during the period of ten days, in which time the male was at the nest 57 times; the female, only 8. Taking the total for the two nests: in 10 hours 5 minutes, the male went to

the nest 84 times; the female, 11. That is to say, the females made only 13 percent of the visits. In reality, although they went to the nest 11 times, the ratio of actual work might safely be much reduced, for in watching them I was convinced that as a rule they came to the nest not to build, but to inspect the building done by their mates: indeed, at one nest I saw nothing to make me suspect that the female did any of the work. Her coming was usually welcomed by a joyous song, but once the evidence seemed to prove that she was driven away; perhaps she was too free with her criticisms! In another case the work was sadly interrupted by the presence of the visitor, for while she sat in the nest her excited mate flew back and forth as if he had quite forgotten the business in hand. In several instances, while the males were at work building, or were guarding the nests, the females went off by themselves, and I saw two of them return home high in the air as if they had come from a distance. I suspected that they had been to lunch at the pepper trees, for they came from that direction. As they approached, their mates who had been sitting about indifferently before, suddenly became alarmed and warned them away from my neighborhood.

At other times when I rode in, the males would make large circles, seventy-five feet or more above me, as if to get a clear understanding of the impending danger. This was when small nest hunters were about, and the birds were some whose nests I could not find. Those whose nests I studied soon lost their fears, and were perfectly natural at their nests, even answering my calls and attempted imitations of their songs.

After finding that the males did most of the building, I was anxious to see how it would be when the brooding began. Three of my nests were broken up beforehand, however, and the fourth was despoiled after I had watched the birds on the nest one day. Nevertheless, the evidence of that day was most interesting, as far as it went (see Tables, Nest No. 2, June 25). It proved that while the female lacked the architect's instinct, she was not without the maternal instinct. There were two eggs in the nest, and in the one hour that I watched, each bird brooded the eggs six times. Before this, the female had been to the nest so much less than the male that she was much shyer; but now that the

eggs were there, although my horse frightened her by trampling down the brush near by, it was she who first overcame her fears and went to cover the eggs.

When building, the male was an enthusiastic worker. He would fly back and forth from the ground to the nest with his material so rapidly that it kept me busy recording his visits. As the tables show, he once went to the nest four times in four minutes (Nest No. 1, May 27); at another time, 17 times in one hour four minutes (Nest No. 2, June 9). Sometimes he stayed at the nest only half a minute, and when he stayed three minutes, it was so unusual that I recorded it. However, he worked spasmodically. On June 9, he came 17 times in one hour, but during the next half hour, he came only 5 times. The birds seemed to divide their mornings into quite regular periods. When I awoke at 5.30 I would hear them at the pepper trees breakfasting, and some of them were generally there as late as eight o'clock. From eight to ten they worked with a will, though the visits usually fell off after half past nine. When working in this more deliberate way, the male would go to his perch on an adjoining tree and sit and preen himself, catch flies, apparently, or sing between his visits. Once he sat on the limb in front of the nest for nearly ten minutes. By ten o'clock, I found that I might as well go to watch other birds, as little would be going on with the Phainopeplas. They often flew off to the pepper trees.

In building, the birds laid in the fine bits of weed gently, weaving in the longer stems a little and moulding more or less; but the compactness of the nest came rather from the mass of material than from any effort of workmanship.

It would be interesting to know how commonly the males do the building, and if the custom prevails, how it affects the broods that should keep up the Phainopepla population. None of the four nests I found came to anything. As there was a schoolhouse near the nesting ground, the birds should have paid better heed to the laws of evolution. Supposing that the ancestors of these birds came from deserts unfrequented by small boys, it would be interesting to know if civilization will eventually modify the habits of the Twin Oaks' Phainopeplas.

RECORD OF VISITS OF MALE AND FEMALE *Phainopepla* TO NEST WHILE BUILDING. SPRING OF 1894.

Nest No. 1. DATE.	TIME AND SEX.															DAILY TOTALS.			
																Hrs.	Min.	♂	♀
May 25																	15	5	1
26	♂ 9.07	♂ 9.09	♂ 9.11	♂ 9.16	♂ 9.30	♂ 9.36	♂&♀ 9.44	♂ 9.46	♂ 9.54								47	9	1
27	♂ 8.44	♂&♀[1] 8.47	♂ 8.47½	♂ 8.48	♂ 9.40												56	5	1
28	♂ 9.24	♂ 9.26															2	2	—
29	♂ 9.30	♂ 9.36	♂ 9.39	♂ 9.43	♂ 9.49	♂ 10.											30	6	—
Nest No. 2.															Total for Nest No. 1.	2	30	27	3
June 8	♂ 8.25	♂ 8.40	♂ 8.50	♂&♀ 9.07	♂ 9.08	♂ 9.10	♂ 9.11	♂ 9.14	♂ 9.35							1	10	9	1
9	♂ 8.15	♂ 8.16	♂ 8.17	♂&♀ 8.25	♂ 8.32	♂ 8.32½	♂ 8.33	♂ 8.39	♂ 8.45	♂ 8.49	♂ 8.50	♂ 8.51	♂ 8.53	♂ 9.04	♂ 9.06				
	♂ 9.15	♂ 9.19	♂ 9.27	♂ 9.37	♂ 9.55	♂ 9.59	♂&♀ 10.03									1	48	22	2
11	♂&♀ 9.05	♂ 9.06	♂ 9.10	♂ 9.12	♂ 9.14	♂ 9.16	♂&♀ 9.20	♂[2] 10.40	♂&♀ 10.51	♂ 10.52	♀ 10.53	♂ 11.04	♂ 11.14	♂ 11.28	♂ 11.31	2	16	14	4
12	♂ 8.23	♂ 8.26	♂ 9.02	♂ 9.05	♀ 9.06	♂ 9 14	♂ 9.18	♂ 3.56								1	5	7	1
18	♂ 8.10	♂ 8.12	♂ 8.43	♂ 9.07	♂ 9.26											1	16	5	
															Total for Nest No. 2.	7	35	57	8
															Total for both Nests.	10	5	84	11

[1] Female stayed on nest one minute and male came twice while she was there.

[2] I was absent from 9.50 to 10 o'clock.

DESCRIPTIONS OF A NEW WARBLER AND A NEW SONG SPARROW.

BY WILLIAM BREWSTER.

ON examining the large series of Parula Warblers contained in the United States National Museum and in my own collection — in all upwards of two hundred specimens — I find that the birds which breed in the lowlands of our Southern States differ so appreciably from those which pass their summers at the North as to make it desirable to separate the two subspecifically. The southern form has first claim to the name *americana*, for Catesby's excellent plate and description of "*Parus fringillaris*" (Nat. Hist. Car., etc. I, 1731, p. 64), on which Linnæus based his *Parus americanus* (Sys. Nat., I, 1758, p. 190), were unmistakably taken from a southern bird. As no one of the other names which have been applied to the species at large seems to be clearly available for the northern form,[1] I propose to call the latter

Compsothlypis americana usneæ,[2] new subspecies. NORTHERN PARULA WARBLER.

Type, ♂ ad., No. 5392, Collection of W. Brewster, Lake Umbagog, Maine, May 14, 1881; W. Brewster.

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[1] *Ficedula ludoviciana* Briss. (Orn. III, 1760, p. 500, pl. 26), *Motacilla ludoviciana* Gmel. (Sys. Nat. I, 1788, p. 983, based on Brisson) and *Motacilla eques* Boddaert (Planches Enlum., 1783, pl. 731, fig. 1, 709 fig. 1) all relate exclusively to the southern bird. *Sylvia torquata* Vieill. (Ois. Am. Sept., II, 1807, p. 38, pl. 99) is in some doubt inasmuch as "New York" is mentioned in connection with its range, but the accompanying description, as far as it can be identified, applies to the southern form. *Sylvia pusilla* Wils. (Am. Orn. IV, 1811, p. 17, pl. 28) is preoccupied in Latham's 'Index Ornithologicus,' Supplement, II. 1801, p. 56, by *Sylvia pusilla* = *Acanthiza pusilla* Vigors, an Australian bird belonging to the family *Timeliidæ*.

[2] This bird usually, if not invariably, builds its nest in or of the *Usnea* 'moss,' while its southern representative, the true *C. americana*, is almost equally addicted to nesting in the Spanish moss (*Tillandsia*).

COMPARATIVE DIAGNOSES.

Compsothlypis americana.— Averaging slightly smaller but with a longer bill. Adult male with more yellow on the under parts and less black or blackish on the lores and malar region; the dark collar across the jugulum narrow, obscure, often nearly wanting; the chest pale, diffuse russet, without obvious markings.

Breeding Range.— The South Atlantic and Gulf States east of Texas, northward near the Atlantic Coast to the District of Columbia, and in the interior to Mt. Carmel, Illinois.

C. a. usneæ.— Averaging slightly larger but with a shorter bill. Adult male with less yellow on the under parts and more black or blackish on the lores and malar region; the dark collar across the jugulum black or blackish, broad and conspicuous; the chest mottled or spotted with rich brownish chestnut.

Breeding Range.— New England, New York, and westward along the northern tier of States, northward into the Maritime Provinces and Canada.

Although the characters just pointed out are all, apparently, of greater or less diagnostic value, no one of them, unfortunately, is quite constant. The most reliable distinction is that of the depth and definition of the reddish brown on the chest. With both forms the feathers of this part have brown centres and yellow margins, but in *americana* the brown is so pale and suffused with yellowish that the whole area over which it is distributed appears nearly uniform in tone, whereas in *usneæ* the brown is so rich and red (approaching chestnut in many birds) that it contrasts strongly with the yellow by which it is bordered, and gives the plumage the appearance of being rather distinctly mottled or spotted. This difference is almost as pronounced in young males in autumn as in old birds in breeding plumage. A still more striking character is to be found in the relative depth and extent of the dark collar on the jugulum, but while in fully seventy-five per cent of my specimens of *usneæ* this collar is much broader and blacker than in any of the examples of *americana*, a few spring males of the former have it but poorly defined or even practically wanting. Such birds are probably immature. With some of them the yellow of the under parts is quite as extended as in typical *americana*, but as a rule *usneæ* has much the less yellow of the two, especially on the throat. It is difficult to separate females of the two forms save by the difference in size, and in the shape and pro-

portions of the bill, but the female of *americana* is usually yellower beneath than that of *usneæ* and much more rarely shows any distinct traces of blackish on the jugulum.

It is probable that in the main the breeding range of *C. americana* is confined within the low parts of the South where the Spanish moss (*Tillandsia*) flourishes, and that *C. a. usneæ* is to be found in summer only where the 'Old Man's beard' (*Usnea*) grows, but the summer distribution of the northern bird is evidently not fully co-extensive with the distribution of its favorite 'moss,' and the southern form passes somewhat beyond the northern limits of the *Tillandsia* region, for it is represented in my series by several apparently typical examples from Washington, D. C., and Mt. Carmel, Illinois. Unfortunately I have seen no summer birds from the regions immediately to the northward of these points, where, it may be assumed, the two forms approach each other more or less closely if they do not actually intermingle. That they sometimes intergrade is shown conclusively by five breeding males taken by Mr. Scott at Wytheville and Mountain Lake, Virginia, in June and July, 1889. In respect to color and markings these birds are about intermediate between *americana* and *usneæ*, but their bills are as large as in extreme specimens of the former. I have several other similar specimens collected during the migration in Florida.

Melospiza fasciata merrilli, new subspecies. MERRILL'S SONG SPARROW.

Subspecific characters.— Similar to *Melospiza fasciata guttata* but with the bill smaller, the ground color of the upper parts — including the sides of the head and neck — lighter and more ashy, the dark markings (especially those of the back) blacker and more sharply defined, the white of the under parts clearer and more extended.

Type, ♂ ad. (No. 46,026, Collection of W. Brewster, collector's No. 947) Fort Sherman, Idaho, March 6, 1895; Dr. J. C. Merrill, U. S. A.

Length, "6.10"; wing, 2.63; tail, 2.58; tarsus, .84; length of culmen from feathers, .44; depth of bill at nostrils, .25.

In respect to the size and shape of the bill, the length of the tail, the character and definition of the dark markings of the breast, sides and back, and the extent of the white on the under parts,

this form, of which Dr. Merrill has sent me nine specimens from Fort Sherman, is apparently intermediate between *M. f. montana* and *M. f. guttata.* It differs from both, however, in the ground color of its upper parts which are generally of a dark but clear ashy brown very unlike the faded grayish brown of *montana* and with but little of the rich, dull rusty which suffuses the plumage of *guttata.* Of the thirteen specimens of *merrilli* one taken in autumn affords the nearest approach to *guttata.* The spring birds (some of which were collected in April and May) are all essentially similar to the type of *merrilli.*

Dr. Merrill writes me that this Song Sparrow breeds at Fort Sherman where he took four nests and sets of eggs in 1895.

THE TERNS OF MUSKEGET ISLAND, MASSACHUSETTS. PART II.

BY GEORGE H. MACKAY.[1]

REFERRING my readers to 'The Auk' for January, 1895, page 32, I now desire to put before them under the same title, some further data collected during the past summer. It had been my intention to visit Muskeget this year on the same dates as last, that comparisons might be better made of results. Had my purpose been carried out, which it was not, such would not have proved conclusive, for the reason that although the Terns arrived a week earlier than they did in 1894 and 1893, and ten days earlier than in 1892, they apparently did not commence to lay their eggs as early this season as last, for it was not until May 28, 1895, that the first two nests, each containing one egg, were discovered, notwithstanding Mr. Sandsbury had taken daily walks over Muskeget Island proper for this purpose, commencing on May 20. The first eggs noted in 1894 were found on May 21.

[1] Read before the Nuttall Ornithological Club, October 21, 1895.

It was on the evening of May 1, 1895, that the cries of the *first* arrivals of this season's Terns were heard; none were *seen*, however, until the next day, when half a dozen were observed high up in the air over Muskeget proper, the wind being east. On May 3 they were arriving in fair numbers, some three hundred (estimated) being seen; of these, some alighted on the shore of a cove on the northeast side of Muskeget Island proper. The weather was clear and calm, and there was a very heavy dew during the night. On May 6 the wind was northeast and the weather foggy; the Terns were now quite numerous. On May 7 it was calm in the morning, but breezed up in the afternoon with fog. The Terns were continually augmenting in numbers and were now abundant.

As previously stated, the first eggs this season were noted on May 28; on the 29th, 9 nests, each containing 1 egg, were discovered. On June 6 were observed 18 nests, each containing 1 egg; 72 nests each with 2 eggs; and 4 nests with 3 eggs each; but none with either 4 or 5 eggs. On June 8 was observed 16 nests with 1 egg each; 80 nests with 2 eggs each; 26 nests each with 3 eggs; and 2 nests each with 4 eggs; no nest of 5 eggs was seen. On June 9, Mr. Sandsbury walked in a direct line from his house to the north shore of Muskeget Island proper, returning by another line not covered by the first. He noted 263 eggs. On June 23 he repeated the walk, noting 457 eggs. On July 5 he again went over the same ground and noted 34 live, and 27 dead chicks.

I landed on Muskeget shortly before noon on July 7, and soon commenced observations. I have followed my previous plan of giving the results of this visit in the following condensed form: —

	Nests.	*Eggs.*	*Dead Chicks.*	*Live Chicks.*
July 8, '95. Muskeget Island proper.	716	1280	255	18[1]
" 7, '95. South Point, Muskeget Island.	65	127	3	13
" 7, '95. South Point Island.	257	534	13	51
" 7, '95. Gravelly Island.	406	808	1	6
Totals,	1447	2749	272	88

[1] Mr. Sandsbury did not note the live chicks here.

Of the nests on *Muskeget Island proper* 244 contained each 1 egg; 395, each 2 eggs; 62, 3 eggs; 15, 4 eggs; no nest with 5 eggs was observed.

South Point of Muskeget Island.— This is a narrow strip of sand forming the extreme western extension of Muskeget proper. The beach-grass (*Ammophila arundinacea*) grows here luxuriantly, excepting near the shores, and towards the extreme end, which latter is bare of grass, with the exception of a few tufts. The Terns do not place their nests to any great extent among the tall grass, although some do where there are small *open* spaces. The majority of them apparently prefer the thinner grass and the windrows of eel grass (*Zostera marina*), as also the bare sand nearer the shores. We found here 19 nests, each containing 1 egg; 31, each 2 eggs; 14, 3 eggs; 1, 4 eggs; no nest with 5 eggs was observed. I noticed but few chicks or broken egg-shells here.

South Point Island.— This breeding ground is more elevated than any of the neighboring sands, and presents the best of conditions for the wants of these birds. The beach-grass grows scantily over its surface, and good sites for nests, with an outlook, are available everywhere. When I visited it on July 7 I found a great many of the eggs hatched. Its occupants are the same as last season, Roseates and Wilson's. This island being separated by only a narrow strait of water from South Point, Muskeget Island, the birds are practically the same at both places. Of the nests found, 30 contained each 1 egg; 179 each 2 eggs; 46 each 3 eggs; 2, 4 eggs; no nest with 5 eggs was discovered.

Gravelly Island.— Of all the breeding grounds in these waters, none attract and hold me pleasure bound equal to this little spot of about two acres, on which is concentrated the greatest amount of bird life, for its area, on the coast, its occupants being mostly the beautiful Roseate Tern (*Sterna dougalli*). Being situated at some little distance from the other islands, it is slightly more secluded and but little visited. Its central and highest part is covered with tall beach-grass. In the middle of the island is an unoccupied house, within fourteen inches of one of the corner posts of which, in a little hollow in the bare sand, there rested two eggs of a Roseate Tern; a little further away, say fifteen feet, was

still another nest and eggs. Disturbing the birds on our landing, we were immediately surrounded by a throng, all vigorously protesting against our entry. Mr. Sandsbury and I found here 68 nests which contained 1 egg each; 280 nests with 2 eggs each; 52 with 3 eggs each; and 6 with 4 each; no nest with 5 eggs was observed. It causes me some solicitude to think that if in any season the above house is occupied, not a bird will nest on this island, there being only sufficient room for one occupant. I am, however, of the belief that if such should be the case, the birds will locate on the other islands, if they can find undisturbed occupation.

On July 29, 1895, I again visited Muskeget Island and took a survey of all the breeding grounds. As will be perceived by the following result, incubation was drawing to a close, most of the young birds now being able to fly. At times when disturbed on Muskeget Island proper they would rise in such numbers as to remind me of a snow storm. The result of this, my second trip, is tabulated as follows:—

	Nests.	*Eggs.*	*Dead Chicks.*	*Live Chicks.*
July 30, '95. Muskeget Island proper.	166	260	45	12
" 30, '95. South Point, Muskeget Island.	33	53	3	45
" 30, '95. South Point Island.	75	120	26	63
" 29, '95. Gravelly Island.	61	93	14	26
Totals.	335	526	88	146

Of the above nests on *Muskeget Island proper*, 80 contained each 1 egg; 77, 2 eggs; 9, 3 eggs; no nest of 4 or 5 eggs was observed.

On *South Point, Muskeget Island*, 13 nests contained each 1 egg; 19, 2 eggs; 1, 3 eggs; no nest of 4 or 5 eggs was observed. On *South Point Island*, 33 nests contained each 1 egg; 39, 2 eggs; 2, 3 eggs; 1, 4 eggs; no nest with 5 eggs was observed. On *Gravelly Island*, 36 nests contained each 1 egg; 20 nests, 2 eggs; 3 nests, 3 eggs; and 2, 4 eggs. No nest of 5 eggs was observed anywhere during the entire season, nor was there anything unusual or peculiar in the appearance of any of the eggs

observed this summer, with the exception perhaps of two nests, each containing two eggs; in each case one egg was normal, while the other was of about half the usual size. On July 30, and again on August 16, about half a dozen chicks in the down, just out of the shell, were observed on South Point Island.

No correct conclusions can be based on the number of *live* chicks noted, on account of the impossibility of making even an approximate estimate of their real number. I take pleasure, however, in stating that never since I have known anything about them, have these Terns increased to such an extent as they did from last season to this. I regret my inability to give even estimates, *there being too many of them* for that. The present year has also been a most favorable one, as will be evidenced by the arrivals next spring.

In regard to certain "*dropped eggs*" described in my former article, I would say that during my first visit I found ten, eight of which I called Roseates, and two Wilson's; all were fresh. On my second visit I found thirty. One of these was dropped by a Wilson's Tern close beside me, being the direct result of the excitement caused by my presence. It struck a small stick and was broken. Mr. Sandsbury this summer also saw a Tern drop an egg in mid air.

It would seem as if the Terns in this locality were not adverse to drinking fresh water, for the two small ponds on Muskeget Island proper are *constantly* frequented by numbers, who take up the water invariably while on the wing.

From September 1 to 7 the Terns seemed to leave the middle of Muskeget Island proper, and roosted on the outside beaches at the west and south side of the island. From the 15th to the 22d they were observed to collect in large flocks, when they would mount in a spiral way, circling high up, and then descend again, indicating that they were getting themselves in training to start on their southern migration. The weather was fine, with southerly winds. On the 26th and 27th of September the wind was easterly with gentle breezes. Several very large flocks rose up in the air until lost to sight, being headed in a southwest direction when last seen. These Terns must migrate at an immense altitude, for they go up out of sight when they depart in

the autumn, and seem to drop from the clouds when they appear in the spring. By September 30 there were comparatively few Terns remaining, these being around the rips at the openings. On October 2 Mr. Sandsbury wrote me there were no Terns in sight from his house on Muskeget Island proper. I saw a few single Terns resting on the water, and flying about, as I passed through the Sound on October 3.

Since my former article I have made some further attempts to solve the problem of the cause of certain differences between what I have called the *reddish* legged and *flesh-colored* legged chicks of *Sterna hirundo* (see Auk, Vol. XII, p. 44). I found these chicks in evidence again this summer in about the same proportion as last season, say one-third red-legged birds and two-thirds with flesh-colored legs. As far as my observations go the differences between them appear to be fairly constant up to the period of their being able to fly, which is as far as I have been able to observe them. Hoping to obtain some further evidence, I kept a number of each kind in separate coops on Muskeget. None of them, however, lived over ten days, and most of them died inside of a week. They were fed on lobsters and clams. I then took a small series of selected chicks, had them sexed, made up into skins, and forwarded to Washington for Mr. Robert Ridgway's inspection, together with some other Terns' skins. He pronounced them *S. hirundo*, as did Mr. William Brewster later. This point being thus settled I would say that there are here apparently *two* kinds of chicks which differ in actions and in appearance. The red-legged are brighter, more active, and neater looking. Those with flesh-colored legs are lethargic and more stupid. Their bills are stouter and larger, and all in all they are a coarser looking bird, and I think a good many of them are hatched earlier than the red-legged birds. Under such conditions, is it not possible that there may be two varieties of *S. hirundo*, with differences which may be constant during youth, but which become undistinguishable in the adult birds?

The downy young of the Roseate (*S. dougalli*) may be distinguished by their upper parts being gray, white, and black, intermixed in longitudinal streaks; under parts whitish; bill pinkish flesh color, with black tip; legs and feet black. As they advance

in age, and by the time they are about to fly, the bill becomes wholly black, and the legs a more intense black. The general effect of the upper parts while in the down is a muddy brownish black; when older, the first color of the scapulars is black with light ash brown border, and when about to fly, a slight roseate hue is noticeable, in certain lights, on the breast.

It is interesting to see how defined and prominent certain characteristics of this beautiful bird are evinced in the chicks, in contrast with those of Wilson's Tern. The former has the 'blooded' strain, resenting in a vigorous, I might almost say fierce, manner, any unceremonious treatment, actively struggling and biting in order to effect release when captured. They are graceful and stylish looking even before they are able to fly much. Wilson's Tern, on the other hand, scarcely shows any of these marks of character (the nearest approach being developed in the red-legged chicks above described), being stupid and lethargic, and but slightly aggressive up to the age of flying.

Among the series of Terns taken this summer was one Arctic (*S. paradisæa*), a bird just commencing to fly, and which was sent to Washington with the others. It is now in Mr. William Brewster's collection. It may be described as follows: Entire under surface *white*, with the exception of a very faint *vinaceous* wash over lower sides of neck and a few *grayish* tipped downy feathers on tibiæ and about anal region. General color of back and wings clear *gray* with upper outside edges and tips of primaries and outer tail feathers *slate gray*, the feathers of the back narrowly and faintly edged first with *clove brown* and outside of this with *pinkish buff;* inner edges of primaries and nearly the whole of secondaries as well as feathers of the tail pure white. Feathers of the forehead white; those of the crown mixed black and white, becoming entirely black upon the occiput and sides of head, including region about the eye. The black of the head is separated from the pure gray of the back and wings by a broad band of white faintly washed with gray. The whole bird is sparingly covered with long downy hair-like feathers protruding beyond the others, so light and fluffy as to wave about at the slightest breath. Tip of bill black; rest of bill and feet pale reddish.

I wish to say a few words before closing regarding the condition of the colony of Laughing Gulls (*Larus atricilla*), which are domiciled on Muskeget Island proper. A more highly gratifying state is difficult to imagine. The increase of last season is unmistakable. On June 9, 1895, Mr. Sandsbury found 10 nests, 4 of which contained 1 egg each; 5, 2 eggs each; and 1, 3 eggs. On June 18, he found 4 nests, each containing 1 egg; 3 nests with 2 eggs; 7 nests with 3 eggs each. On June 23 he again walked over the ground and noted 3 nests of 1 egg each; 3 nests of 2 eggs each; and 9 nests of 3 eggs each. No nests containing 4 or 5 eggs each have been observed during the entire season. On July 5 he again walked over the same ground, noting 4 nests of 1 egg each; 3 nests of 2 eggs; 2 nests of 3 eggs each. He also noted 18 young chicks in the down. The greater part of the nests above noted were marked with sticks during his walks, so that they might not be counted a second time.

On July 8 I went all over this breeding ground, which is located this year where it was last season; its area has, however, increased very materially. It now embraced a strip nearly one quarter of a mile long and one hundred to one hundred and fifty yards wide, commencing at the North pond and extending in a westerly direction. I noticed a great many broken egg-shells, from which the chicks had been hatched, but I failed to find any of them in the grass. I judged these Gulls were feeling the utmost security, for their nests this season have all been placed in plain view on the top of a bunch of beach-grass stubs, of which materials the nests were constructed. I saw only one 'alley' nest this year. Besides a number of abandoned nests from which the eggs had been hatched, I noted 17 nests containing 37 eggs, most of which had, however, been previously noted by Mr. Sandsbury. Two of these nests contained each 1 egg; 6, 2 eggs each; 2 each 1 egg and 1 chick in the down; 7 nests contained 3 eggs each. As nearly as I could judge, all these eggs were near the point of hatching, a large portion of them being chipped.

On July 30, during my second trip to Muskeget, I again went carefully over all this breeding ground. Nearly all the eggs had been hatched, but I did not see a single *young* bird in the air. After considerable search Mr. Sandsbury and I found one nest

with 1 egg and 2 chicks in the down, and close by a fresh soft-shelled crab recently dropped by one of the parents; another nest contained 1 chipped egg, and a broken egg-shell; and still another 2 eggs. We discovered only 1 chick, which was about the size of a pigeon and looked very much like one, except for the length of its legs. This bird was mature enough to fly but made no attempt to do so, being very tame, eating from the hand the same afternoon. I have not seen a dead chick this season.

As a description of this large chick may prove of interest to some readers I give it, as follows: Feathers of the back slate gray edged at the tip with drab gray; top of head and sides mouse gray; exposed edges of wing-coverts and covered edges of feathers on back plumbeous; inner webs of the tail feathers and primaries black; throat light gray; breast and sides gray; bill, legs, and feet chocolate color.

It was apparent to me from the many abandoned nests and broken egg-shells — more than I have ever before seen — that this season has been a most favorable one for these Gulls. I noticed the old birds contentedly sitting about on all the bare spots of sand that were available on their breeding grounds, where they could watch and care for their young which were hidden in the beach-grass.

THIRTEENTH CONGRESS OF THE AMERICAN ORNITHOLOGISTS' UNION.

THE THIRTEENTH CONGRESS of the American Ornithologists' Union convened in Washington, D. C., Monday evening, November 11, 1895. The business meeting was held at the residence of Dr. C. Hart Merriam. The public sessions, lasting three days, were held in the Lecture Hall of the U. S. National Museum, commencing Tuesday, November 12.

BUSINESS SESSION.— The meeting was called to order by the President, Dr. Elliott Coues. Eighteen Active Members were

present. The Secretary's report gave the membership of the Union at the opening of the present Congress as 667, constituted as follows: Active, 47; Honorary, 20; Corresponding, 68; Associate, 532; the total increase for the year being 51.

During the year the Union lost forty-six members,—eleven by death, fifteen by resignation, and twenty were dropped for non-payment of dues. The members lost by death were George Newbold Lawrence,[1] one of the Founders and an Honorary Member, who died in New York City, Jan. 17, 1895, in the eighty-ninth year of his age; Professor Thomas Henry Huxley, who died in London, England, June 29, 1895, aged 70, also an Honorary Member; Edward Hargitt,[2] a Corresponding Member, who died in Edinburgh, Scotland, March 19, 1895, in the sixtieth year of his age; and Henry T. Wharton, also a Corresponding Member, particulars of whose death have not yet been received. Also the following Associates: Dr. Frederick H. Hoadley,[3] who died at Palm Beach, Florida, Feb. 26, 1895, aged 45; George H. Ragsdale,[4] who died in Gainsville, Texas, March 25, 1895; Hon. Franklin Fairbanks,[5] who died in St. Johnsbury, Vt., April 24, 1895, aged 67; Rev. A. H. Gesner,[6] who died at Sing Sing, N. Y., April 30, 1895; John S. Cairns,[7] who was accidentally killed June 10, 1895, while on a collecting trip to Black Mountain, N. C.; Dr. W. H. Stowe, who died in Palmer, Mass., March, 1895; James H. Slater, who died at Nashua, in February, 1895, aged 17.

The report of the Treasurer showed the finances of the Union to be in excellent condition, much better than ever before.

William Brewster was elected President; Dr. C. Hart Merriam and Robert Ridgway, Vice-Presidents; John H. Sage, Secretary; William Dutcher, Treasurer; Dr. J. A. Allen, Charles F. Batchel-

[1] For an obituary notice, see Auk, XII, pp. 198–199, also Memorial Address in the present number.

[2] For an obituary notice, see *Ibid.*, p. 315.

[3] For an obituary notice, see *Ibid.*, p. 199.

[4] For an obituary notice, see *Ibid.*, 316.

[5] For an obituary notice, see *Ibid.*, pp. 315–316.

[6] For an obituary notice, see *Ibid.*, p. 316.

[7] For an obituary notice, see *Ibid.*, p. 315.

der, Major C. E. Bendire, Frank M. Chapman, Dr. Elliott Coues, D. G. Elliot, and Dr. A. K. Fisher, members of the Council. A. W. Anthony, of San Diego, Cal., was elected an Active Member; William T. Blanford, of London, England, an Honorary Member; Dr. D. Webster Prentiss, of Washington, D. C., and William Henry Hudson, of London, England, Corresponding Members. Eighty-eight new members were added to the list of Associates. The usual reports of Standing Committees were received.

PUBLIC SESSION. *First Day.*— The meeting was called to order by the President, Mr. William Brewster. After the routine business was disposed of Dr. Elliott Coues exhibited and explained a collection of unpublished water-color paintings of birds made by Louis Agassiz Fuertes. Remarks on the paintings were made by Mr. D. G. Elliot and the Chair.

The first paper of the morning was by Carl F. Baker entitled 'An Important Factor in the Study of Western Bird Life.' In the absence of the author it was read by Mr. Frank M. Chapman. Remarks followed by Dr. Merriam.

The second paper was 'On Pallas's Cormorant,' by Mr. F. A. Lucas. It was remarked upon by Dr. Coues, Mr. Chapman, and the author.

The third title was 'Further Remarks on the Subgenus *Quiscalus*,' by Frank M. Chapman. Discussion followed by Drs. Allen, Merriam, and Coues, Mr. Brewster, and the author.

The opening paper of the afternoon session was by Geo. H. Mackay 'On Gätke's Heligoland.' It was read by Mr. William Dutcher in the absence of the author. Remarks followed by Drs. Coues, Mearns, Merriam, Stejneger, Gill, Palmer, and Allen, Messrs. L. M. Loomis, Frank M. Chapman, F. A. Lucas, William Dutcher, and the Chair.

In the evening a special public Memorial Meeting was held in the Lecture Hall of the U. S. National Museum, in commemoration of the two distinguished Honorary Members of the Union who have died during the past year. The late George N. Lawrence was eulogized by Mr. D. G. Elliot, and Prof. Thos. H. Huxley by Dr. Elliott Coues.

Second Day.—The meeting was called to order by the President,

Mr. Brewster. A communication was received from Dr. Ch. Wardell Stiles, delegate from the United States to the International Zoölogical Congress, requesting the Union to appoint a representative to an Advisory Committee to which will be submitted all questions of nomenclature likely to be ruled on by the International Zoölogical Congress to be held in England in 1898. Dr. J. A. Allen was so appointed.

The reading of scientific papers began with one by Prof. F. E. L. Beal on the 'Food of the Meadowlark.'

The next paper was 'Methods in Economic Ornithology, with special reference to the Catbird,' by Sylvester D. Judd. Remarks followed by Prof. Beal, Messrs. F. A. Lucas, and J. Van Denburgh, Dr. Merriam, and the author.

The third title was 'Notes on the Birds of Idaho,' by Prof. M. J. Elrod. In the absence of the author it was read in part by Dr. Merriam, who remarked upon the paper. Further remarks followed by Mr. Rolla P. Currie.

'Pine Grosbeak (*Pinicola enucleator*) in Captivity,' by Ora W. Knight, was the fourth paper of the morning. It was read by Mr. F. A. Lucas in the absence of the author. Remarks followed by Drs. Merriam and Allen, Messrs. Loomis, Judd, and Lucas.

The first paper of the afternoon was by Mr. Leverett M. Loomis entitled 'Midwinter Migration Southward in the North Temperate Zone to Breeding Grounds.' It was discussed by Major C. E. Bendire, Mr. C. H. Townsend, Drs. Palmer, Mearns, and Merriam, and the author.

The concluding paper of the day was 'Why are there so few Bluebirds?' by Mrs. Louise M. Stephenson. As the author was not present it was read by Mr. Wm. Dutcher. Extended remarks followed by Dr. T. S. Palmer.

Third Day.— The meeting was called to order by the President, Mr. Brewster. Before proceeding to the reading of papers, the Committee on resolutions presented the following Report: —

"*Resolved:* That the thanks of the American Ornithologists' Union be and hereby are tendered to the Board of Regents of the Smithsonian Institution for the use of the Lecture Hall of the U. S. National Museum as a place of meeting for the Thirteenth Congress of the Union, and for other courtesies extended.

"*Resolved:* That the thanks of the visiting members of the American Ornithologists' Union be and hereby are tendered to the Washington members for their cordial welcome and generous hospitality."

The first paper of the morning was by Mr. Frank M. Chapman, 'On the Standing of *Ardetta neoxena*.' Remarks followed by Drs. Allen and Merriam, Mr. Brewster, and the author.

The second paper was 'What Constitutes Publication,' by Dr. J. A. Allen. Remarks followed by Dr. Merriam.

The third title was 'The Value of the Tongue in the Classification of Birds,' by F. A. Lucas. Remarks followed by Dr. Allen.

The fourth paper was by Dr. T. S. Palmer, 'On Introduced Birds.' Remarks followed by Drs. Merriam and Gill, and the author.

The opening feature of the afternoon session was an exhibition by Mr. William Palmer of pictures, thrown on a screen, of living birds taken in their haunts, and of nests *in situ* from photographs made by Messrs. Wm. Brewster, F. M. Chapman, Harry W. Flint, and himself. Explanations were made by Messrs. Brewster, Chapman, and Palmer.

The first paper of the afternoon was entitled 'A Critique on Trinomial Inconsistencies,' by Wm. Palmer. Discussion followed by Drs. Allen and Merriam, Messrs. D. G. Elliot, F. M. Chapman, H. C. Oberholser, and the author.

Owing to the lack of time for their presentation in full the following papers were read by title:

'The Terns of Muskeget Island, Part II,' by Geo. H. Mackay.

'Kingbird and Sapsuckers in Southern California,' by A. J. Cook.

'A few Effects of the Winter of 1895 upon the Spring and Fall Migration in Canton, Mass.,' by J. H. Bowles.

The Union then adjourned to meet in Cambridge, Mass., Nov. 9, 1896.

This Congress was a most successful one — a thoroughly representative gathering of American ornithologists. It was especially gratifying to see so many Associate Members present.

JNO. H. SAGE,
Secretary.

Portland, Conn., Nov. 30, 1895.

RECENT LITERATURE.

Elliot's Monograph of the Pittidæ. — The fifth and concluding part of this beautiful monograph[1] is dated January, 1895, its publication thus covering a period of nearly two years. The present part contains nearly forty pages of introductory matter, and eleven plates, with their appropriate text. The species here figured are the following: *Pitta strepitans*, *P. mackloti*, *P. vigorsi*, *P. palliceps*, *P. nympha*, *P. cyanonota*, *P. oreas*, *P. forsteni*, *P. propinqua*, *P. soror*, and *P. inspeculata*. Several of these have not been previously figured.

The species recognized in the present monograph number 48 — an increase of 18, or more than 50 per cent., over the number known in 1863, and included in the author's first monograph of the group. These 48 species are distributed in 3 genera (*Anthocincla*, *Pitta*, and *Eucichla*) and 17 subgenera, of which 42 species and 15 of the subgenera are placed under *Pitta*. Mr. Elliot differs from most previous writers in adopting for some of the species names not generally current, their adoption being rendered necessary by due observance of the law of priority. No new species are described, nor are any new specific names given, but we note the introduction of the following new subgenera: (1) *Monilipitta*, type and only species, *Pitta arcuata;* (2) *Galeripitta*, type and only species, *P. cucullata;* (3) *Pulchripitta*, type and only species, *P. iris;* (4) *Ornatipitta*, including *Eucichla guaiana*, *E. boschi*, and *E. schwaneri;* (5) *Insignipitta*, including *E. ellioti* and *E. gurneyi*.

The Introduction gives (1) an elaborate 'Review of the Literature' of the subject (pp. v-xiii); (2) a history of the Genera (pp. xiii-xv); (3) 'Key to the Genera and Species' (pp. xv-xviii); (4) 'Classification' (pp. xviii-xx); (5) 'Geographical Distribution' (pp. xxi-xxvii). Mr. Elliot considers that the species of Pittas known to us to-day "are probably but the survivors of what was once a great and brilliantly plumaged group, inhabiting a vast extent of territory. The majority of the species," he believes, "have long since become extinct, and those remaining represent the few which have, through what may be termed fortuitous occurrences, been able to keep themselves above water, when the greater portion of their habitats disappeared beneath the waves." On no other supposition does he deem it possible to account for the isolated distribution of certain members of the group, as *Pitta angolensis* on the west coast of Africa, and

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[1] A | Monograph of the Pittidæ, | or | Family of Ant-Thrushes. | By | Daniel Giraud Elliot, | . . . [12 lines of titles, etc.] | — | London: | Bernard Quarich, 15 Piccadilly, W. | 1893–1895. Folio, pp. i-xxvii + (letter-press, unpaged), col. pll. i-li.

For notices of previous parts, see Auk, XI, pp. 62, 173, 243, and XII, p. 65.

P. nympha on the Japanese island Tsu-sima, in the Straits of Corea, as well as in Borneo; the species being for the most part natives of the Eastern Archipelago, but extending into India, Ceylon and China, the Philippine and Papuan Islands, to New Guinea and northern Australia.

As the author states in his Preface, the present is an entirely new Monograph of the Pittidæ, the text of the earlier Monograph having been discarded and that of the present written "as if the subject had only now for the first time engaged my [his] attention." A few of the plates of the first edition have been retained, but the majority are from new drawings by Mr. W. Hart of London, who has most skilfully executed his task. The Pittas constitute one of the most beautiful families of birds, their striking and yet pleasing display of colors rendering them a most attractive subject for the monographer. "It is not often," says our author, "that one returns to his first love and finds her, after many years, more beautiful than ever," as has been his experience in the present instance.—J. A. A.

The Fossil Birds of Patagonia.[1] — It may be a little late to notice Dr. Ameghino's memoir, but as the work has not been reviewed in 'The Auk,' and as some of the birds described therein are truly extraordinary, it is perhaps a case of better late than never; moreover, there are one or two points concerning these birds and Dr. Lydekker's notice of them[2] that deserve at least a passing notice. In this memoir Dr. Ameghino describes the remains of thirty-two species of birds from the Eocene of Patagonia, fifteen of which, as well as nine genera and one family, are new. The main interest of the paper, however, centers about the gigantic forms for whose reception the order Stereornithes was established by Moreno and Mercerat in 1891. These authors have distributed in four families the various genera placed by Dr. Ameghino in the family Phororhacidæ, although this grouping must be largely a matter of opinion, since the parts most necessary for a family diagnosis are lacking. Not all the species of the family are large, but the leading members of the group, *Phororhacos* and *Brontornis*, were birds of great size, rivalling in bulk the *Æpyornis* of Madagascar and the Moas of New Zealand, while they were, like them, flightless. The reduction of the wing had not, however, proceeded so far as in the last named birds. A remarkable feature of the genus *Phororhacos* is the great size of the skull, which in *P. inflatus* is 13 inches long and 5¼ inches across the articular portion, while the mandible of *P. longissimus* is 21 inches in length and 8 inches across the condyles. Small wonder that the symphysis of such a jaw,

[1] Florentino Ameghino | Sur les | Oiseaux Fossiles | de Patagonie | Extrait du Boletin del Instituto Geografico Argentino | tome XV, cahiers 11 et 12 | Buenos Ayres | 1895.

[2] Knowledge, London, June, 1895.

found in 1887, should have been ascribed to some sluggish edentate, so that the name as it now stands was originally intended for a mammal. This size is the more noteworthy when we consider that in most feathered giants, *Gastornis* is an exception, the skull is comparatively small, that of the Moas being so absurdly diminutive for the big body and massive legs as to seem like a caricature. A cervical vertebra of the larger species, *P. longissimus*, measures 5 inches across, and the tarsus of the smaller is nearly 18 inches long, indicating a bird not far from six feet high. *Brontornis* seems to have held much the same position among the Stereornithes that *Dinornis elephantopus* did among the Moas, being low and massive, as may be judged by the tarsus, which is 16½ inches long and 5½ wide at either end. *Pelycornis* was a smaller, more lightly built species than those just mentioned, but, taking the beak as a criterion, it is closely related to *Phororhacos*.

What may be the affinities of these big Stereornithes is a question of much interest, but it is one whose answer is still afar off, not only because such important parts as the sternum and palatal region are unknown, but because many intermediate links are needed to unite these extinct forms with any living birds. Dr. Ameghino lays great stress on the fact that there is no separation between the orbital and preorbital cavities, and that the lachrymal sends a thin process downwards and backwards from its inner edge to unite with the pterygoids (?). The first character is one of small importance since other birds, Gallinæ for example, have practically no bar of bone intervening between the orbit and the nasal, there being but one opening between it and squamosal. The other character seems important, but little can be said concerning it without having seen the skull itself, the more that one or two reference letters cannot be made out. One can but think that through some defect of the specimen the lachrymal and ethmoid have been misinterpreted, since it is ordinarily the lachrymal, and not the ethmoid, which is closely applied to the descending process of the nasal. Dr. Lydekker speaks of certain resemblances between the beaks of *Phororhacos* and those of the Cathartidæ, but the writer fails to see the least similarity between the two. Also, by a slip of the pen, the upward curve of the lower mandible is said to be found only in the Trumpeter, *Psophia*, among existing birds, whereas *Psophia* has no, or but the slightest, upturning of the mandible while numerous other birds have this feature. The abortion of the distal part of the pubis *is* unique, although there is a bare possibility that, as in some existing birds of prey, the posterior part of the pubis was present, but free, and attached to the ischium by ligament. Dr. Lydekker makes many comparisons with the Ratitæ, but, as Dr. Ameghino justly says, the Stereornithes appear to show that the division of the class of birds into Ratitæ and Carinatæ is not fundamental, a point wherein most American ornithologists will agree with him. Apparently the main reasons for comparing such forms as *Phororhacos* and *Brontornis* with the Struthiones is because they are large and extinct when, as a matter of fact, mere

size is no reason for supposing a bird related to an Ostrich, while the pelvis of *Phororhacos*, with its aborted pubis, shows that this genus at least is very many removes from any struthious bird. Neither is *Gastornis*, with its primitive type of skull, any relation of the Stereornithes.

The well-developed supra-orbital bone of *Phororhacos* is particularly a mark of South American forms, but as it occurs in such different birds as *Psophia* and some of the Tinamous, it gives no clue to probable relationship, and until the sternum and palate come to light the Stereornithes must remain largely unclassified, although we have some hints as to their affinities and more as to their habits. The skull tells us that the Phororacidæ at least captured living creatures, for the upturned lower mandible occurs among the Herons, and is extremely well-marked in the Kingfishers. Correlated with the beak is the squareness of the hind cranium and the prominence of all the ridges, these things, which have to do with seizing and holding, being found in very dissimilar forms of similar predaceous habits. Birds of prey, which grasp with their talons, have the beak modified for tearing and possess a weak decurved lower jaw. The coracoid has little resemblance to the unique coracoid of *Psophia*, but the bones of the shoulder girdle, particularly the scapula, are very like those of a Heron, while the metacarpus much resembles that of *Palamedea*, minus the spurs. The pelvis, in its straightness and squareness, has certain agreements with that of *Palamedea* and the Herons, and still more with that of *Psophia*, though differing from them most emphatically in the abortion of the pubis. The main facts, however, shown by pelvis and legs, indicate that these birds were runners, though the hypotarsus indicates very plainly that there is no relationship with birds of high degree. That *Phororhacos* and its allies should have resemblances to more than one group of birds is not surprising, not only from their geographical distribution and geological horizon, but because although specialized in details they were generalized in many points of structure. The Phororhacidæ at least seem distantly related to *Psophia* and not much more distantly to the Herons, and we may recall that we have one aberrant relative of the Herons alive to-day in the shape of the curious African *Balæniceps*. That the Stereornithes have any *near* living relatives is not evident and it is much easier to say where their affinities do not lie than where they do, but that such strange forms should have been found in South America seems quite natural, and others just as strange will undoubtedly come to light. We have in such birds as *Chauna*, *Steatornis*, *Psophia* and *Cariama* the waifs and strays of a lost avifauna left by the sea of time stranded on the shores of the present, and the more we delve in the sands of the past, the more of these quaint forms will we bring to light. And we cannot better close than by wishing it may be given to Senor Ameghino to find these missing pieces and fit them in their proper places.— F. A. L.

Elliot's Limicolæ.[1]—A title of twenty-three lines may spare the reviewer some pains in describing a book, but there is much besides to be said of this noble work, in the preparation of which the artist and the publisher have ably aided the distinguished author. Mr. Elliot's splendid monographs of various other families have long since taken classic rank in technical ornithology, but we believe this is his first appearance in book form as a popularizer — an office of not less dignity than that of the systematist or monographer, one of practical importance and human interest, and one not so easy to fill creditably as those who have never tried to do so may imagine. The increase of knowledge is one thing, and its diffusion is another; but the latter is the real measure of the usefulness of the former. He who would make knowledge "understanded of the people" has no easy task to perform; and if he attain a measure of success in this effort, he has stood the severest test to which his ability as an author can be subjected. It would therefore seem certain that in the present instance Mr. Elliot has won fresh laurels.

'Shore Birds' is a new departure for him, in which he addresses himself less to his experienced peers in the science than to sportsmen and others in the rank and file of those who love to study birds in their haunts — those for whom birds are among the brightest flashes of animated nature. For all such, the Plover-Snipe group has such special attractions that the author who chooses this theme is sure of his clientèle.

Mr. Elliot's method of treatment is an easy and natural one. After the introductory matter, which includes a glossary of technical terms, illustrated with an outline plate, and a send-off for Limicolæ in general, he takes each one of about seventy species or subspecies in its turn, giving as main text a concise life-history, under a popular name, and then in small type paragraphs presenting the most accredited scientific name —

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[1] North American Shore Birds | a history of the | Snipes, Sandpipers, Plovers and their allies | inhabiting the beaches and marshes of the | Atlantic and Pacific coasts, the prairies, | and the shores of the inland lakes and | rivers of the North American continent; | their popular and scientific names, together with a full | description of their mode of life, nesting, migration and | dispersions, with descriptions of the summer and | winter plumages of adults and young, | so that each species may be readily identified. | A Reference Book for the Naturalist, Sportsman and Lover of Birds | by | Daniel Giraud Elliot, F. R. S. E., Etc. | Ex-president American Ornithologists' Union | Curator of Zoölogy in the Field Columbian Museum, Chicago; Author of "Birds of | North America," Illustrated Monographs of Ant Thrushes, Grouse, | Pheasants, Birds of Paradise, Hornbills, Cats, Etc. | With seventy-four plates | New York | Francis P. Harper | 1895 | One vol., pp. i-xvi, 17–268, pll. 1–74 (counting 2 cuts in text) + 1 pl., = 75 illust., 100 autograph copies with rubricated title, sm. 4to, regular ed. crown 8vo; published Sept. 26.

which members of the A. O. U. and other readers of 'The Auk' will be sure to recognize — a statement of habitat, and a technical description of the plumage for the sexes, ages, and seasons. There is much to recommend this simple treatment; for the sportsman who already knows his bird, or perhaps does not like technical caviar in his usual rations, can decline this dessert, and take his main course of biography in straight, easy reading. He will find these articles reasonably full, interesting as well as instructive, and may feel confident of their high degree of reliability; for Mr. Elliot has been out among the 'mud-dwellers' with his gun himself, and what he knows of their ways smells less of midnight oil than of gunpowder.

The author's admirable treatment of the Phalaropes raises a point on which we wish to remark. He adopts three genera — *Crymophilus*, *Phalaropus*, and *Steganopus*. Contrary to the opinion of some of his contemporaries, chiefly younger than himself, the present reviewer knows that recognition of genera in zoölogy is a purely arbitrary convention, mainly to facilitate list-making. We can take what grade of differentiation we please as our generic standard; but having adopted any one such, we are logically bound by it, and must not read off with a fine vernier-scale in some instances, and with a coarser gradation in some other cases. The differences between the three species of Phalaropes are coördinated; any one of them differs from the other two to the same degree that these do from each other. There is then one genus, or else there are three genera as Mr. Elliot rightly holds; there cannot be two genera. The hitch in this case seems to have been, that the A. O. U. committee permitted themselves to be influenced by a bit of faddism on the part of some person to whom birds' beaks looked big and their toes small — one who could see minute rostral modifications in a great white light, which so dazzled him that he was blinded to equal or even greater differentiations of digital structure. The same one-eyedness reduced the four-toed genus *Squatarola* to a subgenus of *Charadrius*, yet left the three-toed genus *Arenaria* (or *Calidris*) in full fig apart from *Tringa* (type *canutus*). Now if we remember anything about a group of birds which engaged our virgin pen about thirty-five years ago, there are no two genera of Sandpipers so nearly indistinguishable in form as those represented by *Arenaria calidris* and *Tringa canutus*, if we do not count their digits. Why then do we discriminate these generically, yet fail to separate *Squatarola helvetica* by the same token from the species of *Charadrius* proper? In point of fact, the evolutionary processes which result in the development of an articulated digit and its accessories, however small and practically functionless it may be, or those which end in the suppression of such a digit, are vastly greater in duration and in force than those which merely modify the size and shape of a bill to some appreciable extent; so that in ignoring the former to insist upon the latter, we have probably travestied an evolutionary record of geologic date.

But such points as these are niceties which need not have been made in

noticing a popular work, and would not have been raised in a review for any other periodical than our own and only 'Auk.' Consideration of technicalities takes us to Mr. Elliot's appendix, which gives keys to the families, genera, and species — short cuts to much learning, without which no bird-book now seems to be furnished with all appropriate belongings. These are excellent in the main, presenting the reader with successive alternatives, of which he has only to choose the one to which his specimen conforms to be led speedily and happily to its identification. The keyed appendix also gives formal generic diagnoses, references to authorities for the names used, and explication of etymologies. In this part of his work the distinguished author invites criticism which must be adverse in some few particulars, as in the statement that *Heteractitis* is a word "signifying an inhabitant of 'different shores.'" This word is a mere substitute for the prior but preoccupied *Heteroscelus* of Baird, and the difference implied in its construction is not one of 'shores,' but of certain shore-birds, to wit, those of the genus *Actitis*. It is also unfortunate that typographical errors, which crop up in the main text, cluster obtrusively in the appendix. We happen to know that this is not the author's fault, and can see how he wrestled with the printers — not in prayer, but with the reverse of devotional emotions, akin to those which marked the printers' own struggles with unwonted copy. But aside from this, the manufacture of the volume is perfect, reflecting great credit upon the enterprising publisher, who is rapidly making his reputation for fine book-work. The regular edition is handsome in all its appointments; the limited autograph edition is sumptuous.

Edwin Sheppard is a familiar name in connection with illustrated ornithological literature, and the author of 'Shore Birds' is fortunate in his artist. His fine work began early in the Bairdian period, and the present plates show that his hand has lost none of its cunning with rolling years. Mr. Sheppard's forte seems to be small, telling pictures which hit off likenesses of birds remarkably well for their size without the aid of other coloring than black upon white. They are very smooth and pleasing to the eye, and maintain their excellence evenly — none are bad, though some are more pleasing, and some more effective, than the rest. One of the most artistic pictures is that of the Stilt, whose colors suit the mode of printing well, and whose attitude is striking; the group of downy Kildeers is another which specially attracts the eye. Mr. Sheppard has a keen eye for points about a bird, and a sure touch is bringing them out; he understands structure, and consequently poses birds in natural attitudes. This is fortunate; for he had need of all his craft in attempting to delineate the difference between species of such genera, for example, as *Tringa* and *Totanus*, in which a trained ornithologist often has to look more than once to make a diagnosis. Our general criticism of Mr. Sheppard's work has for many years been, his tendency to needless accessories and too much background; but that may be our individual fancy for pictures of birds on plain white paper — not in quarter-sections of

country or even on sections of tree trunks as large as themselves; and in the present case of full-page plates, the technique we have is perhaps preferable.

We wish this book all the success it so thoroughly well merits; and should that be its happy lot, perhaps the eminent author will not forget that some other groups of game-birds might be treated in the same manner, with equally good results. — E. C.

Some Canadian Birds.[1] — Mr. Chamberlain's very worthy aim is to produce a book on common birds at so low a price that it will be within the reach of every child who would know something of the feathered inhabitants of field and grove. He warns us not to expect too much, and when we glance at the price on the cover of his little volume, we readily admit that we have received more than our money's worth.

He gives pleasingly written biographies of some forty species. His style is attractive and seems well adapted to interest beginners. It is unfortunate, however, that he pays so little attention to the subject of identification, his descriptions being very brief and generally unaccompanied by measurements. It is to be hoped that in the second series of these bird studies, which we doubt not will duly appear, scientific names will be properly capitalized. — F. M. C.

Kirkwood on Maryland Birds.[2] — Faunal lists are of two kinds: they may sum up existing knowledge, however slight, of the life of a region as the basis for future work, or they may present the essentially complete results of long continued, careful observations. The present list belongs to the former class and should be considered as a preliminary report on Maryland birds, or, more strictly, the birds of eastern Maryland, for the author's information is largely drawn from what he terms the 'tide-water' region.

It is of course highly desirable that in a list of this kind attention should be drawn to the large number of birds whose presence in the State can scarcely be doubted, but which through insufficient observation have not actually been recorded within the State limits. To prevent their confusion with birds already known from the State, and to properly emphasize the

[1] Some Canadian Birds. A Brief Account of Some of the Common Birds of Eastern Canada. By Montague Chamberlain. First Series. Birds of Field and Grove. Toronto: The Copp, Clark Company, Limited, 1895, 12mo. pp. x + 96, 15 cuts. 30 cents.

[2] A List of the Birds of Maryland giving Dates of the Arrival, Departure and Nesting Periods of our Regular Birds; also including Stragglers and such others as no doubt occur but are not recorded. By F. C. Kirkwood. Reprinted from the Transactions of the Maryland Academy of Sciences, pp. 241–382. Baltimore, 1895.

fact that they are to be especially sought for, these birds should be included in a separate list with an appropriate heading, as is customary in standard faunal papers. The author, however, commits the serious error of placing these birds in the body of his paper without even typographically distinguishing them from those that properly belong there. Examination shows that of the some 330 species given, about 42 are included as of probable occurrence. *Grus mexicana*, *Scolopax rusticola*, *Pavoncella pugnax*, and *Milvulus forficatus* have, it is true, been recorded from adjoining regions, where, however, they were too evidently accidental to deserve admission here.

The list itself adequately reflects our present limited knowledge of Maryland birds, the author having apparently made excellent use of the material at his command. It is attractively printed and we trust may prove an incentive to ornithological research in the region of which it treats.—F. M. C.

The Structure and Life of Birds.[1]—This work takes a place on an almost vacant shelf in the ornithological bookcase. Its purpose is best stated by the author, who in his preface remarks: "The aim of this book is an ambitious one. It attempts to give good evidence of the development of birds from reptilian ancestors, to show what modifications in their anatomy have accompanied their advance to a more vigorous life, and, after explaining as far as possible, their physiology, to make clear the main principles of their noble accomplishment, flight, the visible proof and expression of their high vitality. After this it deals, principally, with the subjects of color and song, instinct and reason, migration, and the principles of classification, and lastly, gives some hints as to the best methods of studying birds." The specialist reading this syllabus will probably doubt the author's ability to adequately treat of so many and such varied themes within the limits of 400 pages, and while it is true, that some subjects suffer at the expense of others, the book contains a vast amount of exceedingly suggestive and valuable information. Furthermore, at the conclusion of each chapter, a list of works is given for the assistance of those who would pursue the subject more fully.

In the accepted meaning of the word we should imagine that the author of this well conceived book could not be called an ornithologist. Rather he seems to approach his task from the standpoint of the anatomist or physicist, and here he is apparently at home. His chapters on 'The Skeleton of Bird and Reptile' (pp. 6–28), the evolution of birds from reptiles (pp. 29–59), 'Form and Function' (pp. 60–172), and 'Flight' (pp. 173–274) are important contributions to structural and functional ornithology.

[1] The Structure | and | Life of Birds | By | F. W. Headley, M. A., F. Z. S. | Assistant Master at Haileybury College | With seventy-eight Illustrations | London | Macmillan and Co. | and New York | 1895 | The Right of Translation and Reproduction is Reserved. | Sm. 8vo, pp. xx + 412.

When, however, he speaks from a more strictly ornithological point of view, or quotes the observation of others, he shows a lack of familiarity with these more distinctive phases of bird-life. This is particularly true of his remarks on 'Change of Colour without Moulting,' where he accepts as proven the theory that a practically white feather may become black by an influx of "pigment working its way to every part of the feather through channels as yet unknown"; for example, in the breast of the Dunlin, or head of the Little Gull or Black-headed Gull.

The one hundred pages devoted to 'Flight' should be read by all students of animal motion, while the philosophic ornithologist will find abundant food for thought in the chapters on color, reason, instinct, etc.

The chapter on migration will be read with special interest at this time when the publication of an English edition of Herr Gätke's book has awakened a fresh discussion of the many perplexing questions presented by this branch of ornithology. Mr. Headley here shows the lack of field experience more than in any other part of his generally excellent book. He thinks it unnecessary to "call in the assistance of the often-invoked glacial period" to account for the origin of migration and would seek a cause in the failure of the food supply both in the north and south, ignoring the fact that in the American tropics, at least, migrating birds begin their northward journey just as the rainy season sets in and the supply of both vegetable and insect food is greatly increased.

American students will read with some surprise of the orderly manner in which Old World birds are stated to migrate. In the fall the young birds are of course said to start first, a month or two later they are followed by the old birds, and after them come irregular flights consisting probably of cripples and young birds hatched late. "In the spring the order is reversed. First come the old cock birds . . . then old hen birds, then old hen birds and young birds mixed; then young birds alone; and, lastly, cripples in every stage of dilapidation."

These, however, are minor defects in a book which should have a marked influence in raising the character of ornithological research from the mere collector's level to the plane of scientific investigation.— F. M. C.

The A. O. U. Check-List of North American Birds, Second Edition.[1]— The second edition of the American Ornithologists' Union Check-List of North American Birds is uniform in style and typography with the first edition, published in 1886, but omits the 'Code of Nomenclature,' which was issued separately in 1892. The present edition is a reprint of the first edition, with such changes in nomenclature as have been found nec-

[1] Check-List | of | North American Birds | prepared by a Committee | of the | American Ornithologists' Union | Second and Revised Edition | — | Zoölogical Nomenclature is a means, not an end, of Zoölogical Science | — | New York | American Ornithologists' Union | 1895.—8vo, pp. xi + 372. Published Dec. 9, 1895.

essary during the ten years intervening between the preparation of the two editions, and the proper interpolation of the additions in the seven Supplements published 1889–1895. Besides this the statements of 'habitat' or 'geographic distribution,' have been carefully revised, a large proportion of them having been rewritten, in consequence of recent increase in our knowledge of the subject. An effort has also been made, where practicable, to distinguish the breeding range from the general range. The Check-List is thus once more brought fairly abreast of the present knowledge of the subject.

The additions during the last ten years number about 36 species and 90 subspecies. Out of nearly one thousand specific and subspecific names in the first edition not more than 25 have been changed; 8 generic names have been changed, of which 3 were found to be preoccupied, the other generic changes being due to taxonomic revisions; a few groups ranked in the first edition as subgenera have also since been raised to full generic rank. Thus, all things considered, the nomenclature of the first A. O. U. Check-List has proved as stable as its best friends could have expected. That further additions will be made to the list, as time goes on, is evident, and probably a third edition may be found desirable by the end of the next decade.—J. A. A.

Hudson's British Birds.[1]—It is not to be supposed that a new volume on British birds implies a corresponding increase in our knowledge concerning them. Consequently we look for this book's *raison d'être* in the method with which the subject is treated. In matters of detail, it resembles more or less closely other manuals of similar scope, but the author's facile pen and the artist's skilful brush seconded by a generous publisher, have resulted in the production of a work which is deserving a most cordial welcome.

Mr. Hudson is not bound by tradition. He insists that a book on British birds should be strictly such, and he rightly rebels against the custom of allotting as much space to a species which has occurred but once or twice, as to the commonest permanent residents. Of the 376 species enumerated by the B. O. U. list he considers that not more than 210 can rightly be called British birds. The 160 odd accidental or occasional visitants are therefore grouped at the end of their respective families with a brief statement of their true habitat and manner of occurrence in Great Britain. This very commendable proceeding serves a

[1] British Birds | By | W. H. Hudson, C. M. Z. S. | With a Chapter on Structure and Classification | By Frank E. Beddard, F. R. S. | With 8 Coloured Plates from Original Drawings by A. Thorburn | and 8 Plates and 100 Figures in black and white from Original Drawings by G. E. Lodge | and 3 Illustrations from Photographs from Nature by R. B. Lodge | London | Longmans, Green, and Co. | and New York | 1895 | All rights reserved | Sm. 8vo, pp. xxii + 363. $3.50.

double purpose. It does not give these stragglers undue prominence and it permits a much fuller treatment of the native species. Probably no book on British birds which is at all comparable with this in size, contains such extended accounts of their life histories.

In writing these biographies Mr. Hudson aims to give us the characteristic habits of the species rather than a too finely spun sketch, which, however well it depicted his own experience, might be quite at variance with the results obtained by other observers. "Birds are not automata, but intelligent beings," and resemble each other in habits only up to a certain point. It is to this point that Mr. Hudson's biographies bring us. We wish, however, he had included a paragraph on distribution, a matter to which he gives little attention locally, while the fact that the birds he writes of are found outside of Great Britain is rarely stated.

The value of this book is greatly enhanced by its illustrations. These are not only of rare beauty but they are evidently drawn by artists who are familiar with their subjects in life. Furthermore, they possess the latterly unique merit of being drawn expressly for the work in which they appear.

Mr. Beddard's prefatory chapter of thirty-eight pages on 'Anatomy and Classification' treats briefly, but in a manner likely to interest beginners, of the more characteristic avian organs. He concludes with a classification of the orders of birds, in which, among living forms, he begins with the Ratitæ and ends with Psittaci! Not that he has "a deep-seated and mysterious reason" for placing the "Parrots at the end of the Aves Carinatæ," but simply through "sheer inability to place them anywhere in particular." This is evidently not an application of the decidedly original principle expressed on the preceding page, to the effect that, "the more perfect our scheme of classification, the greater our ignorance of the group classified."—F. M. C.

Bendire on the Cowbirds.[1]—The parasitic habits of the Cowbirds render them a peculiarly interesting group, consisting of about twelve species, commonly referred to the two genera *Molothrus* (8 species) and *Callothrus* (4 species). They are of course all confined to the two American continents, ranging from southern Canada to Paraguay. The species of *Callothrus* are essentially tropical, ranging from Mexico through Central America to northern South America, one only, *C. robustus*, barely reaching southern Texas; while *Molothrus* is represented from the colder temperate parts of North America southward across the tropics to temperate South America. Very little is known of the habits of many of the species, only our own *Molothrus ater*, and the *M. bonariensis*, *M.*

[1] The Cowbirds. By Major Charles Bendire, Honorary Curator of the Oölogical Collections, U. S. National Museum. Reprinted from the Report of the U. S. National Museum for 1893 (1895), pp. 587–624, pll. 1–3.

rufoaxillaris, and *M. badius* of southern South America, having been as yet carefully studied in the field. Major Bendire here presents us with an excellent summary of our present knowledge of the subject, consisting of his articles on the North American species, prepared for Part II of his 'Life Histories of North American Birds' (issued as 'advance sheets'), and Mr. W. H. Hudson's articles on the Cowbirds of the Argentine Republic, from Sclater and Hudson's 'Argentine Ornithology.' We thus have in the present paper very detailed accounts of the habits and distribution of five species and one subspecies out of the twelve recognized members of this parasitic group.—J. A. A.

Lucas on the Weapons and Wings of Birds.[1]—As Mr. Lucas says, "a more accurate, if not a better, title for this article would perhaps be 'Some Weapons of Birds'"; and we venture to add that perhaps the title 'The Wings of Birds as Weapons' would be even more descriptive, since the paper relates almost wholly to the use of wings as weapons, and to the spurs and tuberosities with which they are armed. Some birds without spurred wings, as the Pigeons and Swans, are good boxers, but some of the Pigeons are not entirely unarmed, being provided with a horny boss or tubercle at the wrist, which adds effectiveness to their blows. The armature of the Spur-winged Geese, the Spur-winged Plovers, Jacanas, and Screamers is described and figured. Spur-winged birds, although apparently so well equipped for warfare, are, however, so far as known, among the most peaceable and inoffensive of birds; at least such seems to be the case with the formidably armed Screamers, and with the Jacanas and Plovers. Curiously in the latter, the size of the spurs on the wings is correlated with the development of the wattles at the base of the bill, species with large wattles having large spurs, and conversely.

Mr. Lucas has also something to say about the claws on birds' wings, and their significance as "reminiscences of well-clawed ancestors," citing in this connection the clawed fingers of the *Archæopteryx*. Mr. Lucas also devotes a page or two to the Hoactzin (*Opisthocomus cristatus*), figuring the young birds from spirit specimens in the U. S. National Museum, to show the use made of the wing-claws in climbing. In commenting on this antiquated type of bird life Mr. Lucas observes: "Not the least of the many interesting features of the Hoactzin is the rapid change which takes place in the fore limb during the growth of the bird by which the hand of the nestling with its well-developed, well-clawed fingers, becomes the clawless wing of the old bird with its abortive outer finger."—J. A. A.

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[1] The Weapons and Wings of Birds. By Frederic A. Lucas, Curator of the Department of Comparative Anatomy, U. S. National Museum. Reprinted from the Report of the U. S. National Museum for 1893 (1895), pp. 653–663, pl. 1 and 8 cuts in text.

Fisher's Hawks and Owls from the Standpoint of the Farmer.[1]—This is a condensed and very useful summary of the relations of Hawks and Owls to agriculture, based on Dr. Fisher's more elaborate 'Bulletin'[2] on the same subject. He considers first the 'Cause of the Prejudice against Birds of Prey,' and then refers to 'some characteristics of rapacious birds,' and to the 'food habits' of the principal North American species, and then proceeds to briefly treat of the species under the several categories of wholly "harmless species of Hawks and Owls," "wholly beneficial Hawks," "Hawks and Owls mostly beneficial," and "harmful Hawks and Owls." Among the latter are the Gyrfalcon, the Duck Hawk, the Goshawk, Cooper's Hawk, and the Sharp-shinned Hawk, the two latter, owing to the northern distribution of the others, being really the only species occurring in the United States in sufficient numbers to be of any particular importance as enemies of the farmer. These two species, with the Goshawk, Dr. Fisher believes, are the cause of the "unjust hatred and suspicion with which our Birds of Prey are held," in consequence of their often serious depredations upon poultry and game. The publication is timely and should do much to develop a more rational sentiment respecting the real character and the beneficial influence of most of these long-persecuted birds.—J. A. A.

Beddard's 'Text-book of Zoögeography.'[3]—In view of Mr. Beddard's excellent little work entitled 'Animal Colouration' (see Auk, X, 1893, pp. 195–198), and his many valuable contributions to technical zoölogy, the present work is not a little disappointing and will hardly add to the author's reputation as a careful and trustworthy investigator. The pages give evidence of either haste or carelessness, aside from the numerous typographical inaccuracies. Thus we are told, to cite a few examples, that *Gallinula chloropus* and *Totanus incanus* (p. 10) are among the comparatively few species "that have a world-wide range"; that the Curassows (p. 27) occur in California; among the genera enumerated as confined to the 'Palæarctic Region' (p. 89) are *Perisoreus*, *Nucifraga*, *Cyanocitta*, and *Acanthis* (!); *Elasmognathus* (p. 109) is said to

[1] Hawks and Owls from the Standpoint of the Farmer. By A. K. Fisher, M. D., Assistant Ornithologist, U. S. Department of Agriculture. Reprinted from the Yearbook of the U. S. Department of Agriculture for 1894 (1895), pp. 215–232, pll. 1–3, and 3 fig. in text.

[2] See Auk, X, 1893, p. 199.

[3] A Text-book of Zoögeography. By Frank E. Beddard, M. A. (Oxon.) F. R. S., Prosector of the Zoological Society of London, and Lecturer on Biology at Guy's Hospital. Cambridge: At the University Press. 1895. All Rights reserved. 8vo, pp. viii, 246. (Cambridge Natural Science Manuals' Biological Series.)

have been "separated by the late Mr. Alston" as a distinct genus of tapirs, whereas the separation was previously made by Dr. Gill, and rejected by Mr. Alston, who referred the Central American tapirs to the genus *Tapirus;* the genus *Rhea* (p. 111) is given as limited to the Chilian subregion, whereas it has a wide distribution in the Brazilian subregion as well; contrary to current views, the West Indian genus *Solenodon* is repeatedly referred to the family Centetidæ. Besides numerous inaccuracies of this sort, more or less erroneous and positively misleading statements regarding the range of certain groups occur with surprising frequency, while typographical (?) errors (as *Cricetomys* for *Cricetus*, Rhymphastidæ for Rhamphastidæ, *Mimocychla* for *Mimocichla*, *Pilohela* for *Philohela*, etc.) betoken, to say the least, great carelessness. The latest authorities are also frequently overlooked, as, for example, nothing later than Salvin, 1875, is cited on the birds of the Galapagos, although the whole subject was treated by Ridgway on the basis of much new material in 1889. And so on, as regards questions of classification where accepted modern views are ignored.

As regards the general subject, Mr. Beddard's chief authorities are Wallace, Trouessart and Heilprin, the latter by no means a very trustworthy guide. No reference is made to any recent papers on the subject of the geographical distribution of animals in North America, not even to warn readers against the heresies they must contain, judged from Mr. Beddard's point of view.

The work is divided into five chapters as follows: (1) 'The General Facts of the Distribution of Animals'; (2) 'Zoölogical Geography'; (3) 'The Causes which influence the Distribution of Animals'; (4) 'The Fauna of Islands'; (5) 'Some Theoretical Considerations.' The 'general facts' given in the first chapter convey much general information, fairly well stated. The second chapter is devoted mainly to an exposition of 'Mr. Sclater's regions,' from the standpoint of Mr. Wallace. The slight importance of the actual facts of distribution, in Mr. Beddard's estimate, is sufficiently shown by the following extract from p. 78: "The question is, what system shall we adopt? The ideal system would be one which would agree entirely with the distribution of land and sea and their inhabitants; but that is unfortunately impracticable. The next best is obviously the plan to try; and Mr. Sclater's regions are, with an exception here and there, coincident with the continents and larger islands. The great thing is not to dispute the standard to be taken, but to agree in holding one standard." This illogical and unscientific platform is then followed by a recapitulation of Mr. Wallace's reasons for the retention of the Sclaterian regions, which are adopted in the pages which follow.

As necessarily follows in discussing "the causes which influence the distribution of animals," temperature is held as of slight importance, the first subheading being '*Distribution not dependent upon temperature*'! Yet he is compelled to admit: "That the range of animals is to a large degree dependent upon temperature is an undoubted fact; and to a certain

extent that fact does permit of the zonal arrangement of the earth." But he goes on to add, with strange disregard of facts, "only, however, as concerns the arctic regions" ! although he does later make the admission: "It is chiefly marine organisms which show a close interdependence of temperature and distribution."

Lack of space forbids a detailed analysis of the book, which, notwithstanding much that is unphilosophic and objectionable, and many loose statements, contains a great deal of information of value to the general reader, while not a few special points connected with distribution are discussed with ability and fairness. But on the whole the make-up and general character of the book is such as to suggest that it was prepared at the solicitation of a publisher in search of a work on this subject to fill a gap in a projected series of publications on natural history rather than from any innate fitness or desire on the part of the author to write on this particular topic. In other words, that it comes very close to the line of scientific hack-work.— J. A. A.

Townsend on the Birds of Cocos Island.[1] — It was Mr. Townsend's good fortune to be one of the first ornithologists to visit Cocos Island. It is of volcanic origin, and although only four miles long by three wide is heavily forested and well adapted to support a resident land-bird fauna. Situated midway between the mainland at Costa Rica and the Galapagos, the affinities of Cocos birds are of unusual interest. If the islet is simply an isolated volcanic cone, in other words, a true oceanic island, it would be natural to suppose that its resident land-birds would be derived from the mainland. But if Cocos is a portion of the submerged land which, as Dr. Baur[2] claims, once connected the Galapagos with the continent, we might expect to find a Galapagan element in the Cocos avifauna. Of the four species of land-birds secured by Mr. Townsend, *Dendroica aureola*, is Galapagan, *Cocornis agassizi*, and *Nesotriccus ridgwayi*, described as the types of new genera, are the obvious representatives respectively of the Galapagan *Cactornis scandens* and *Eribates magnirostris*, while *Coccyzus ferrugineus*, previously described by Gould from Cocos, has no near relative, though the genus *Coccyzus* is represented in the Galapagos by the mainland *C. melanocoryphus*. The affinities of the Cocos avifauna are therefore clearly Galapagan and give support to Dr. Baur's theory.

The previously little known *Creagrus furcatus* was found in marshes at Malpelo, and five species of Petrels are given from the vicinity of the Galapagos.— F. M. C.

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[1] Birds from Cocos and Malpelo Islands, with Notes on Petrels obtained at Sea. By C. H. Townsend. Bull. Mus. Comp. Zoöl., Vol. XXVII, No. 3, July, 1895, pp. 121–126. Two colored plates.

[2] American Naturalist, 1891, pp. 217–229, 307–326.

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GENERAL NOTES.

Do Young Loons eat Fresh-water Clams?—On July 5, 1895, while paddling with my brother along the northern end of Lake Utopia, in the Province of New Brunswick, we saw near our canoe a young water bird which by its size and actions and especially by the cries of its parents near by, was proven to be a young Loon, the Great Northern Diver (*Urinator imber*). Wishing to examine it more closely we chased, and in spite of its game efforts to escape, caught it. When near by we noticed something hanging to its bill which plainly much retarded its movements and which proved to be a fresh-water clam or mussel of two inches in length. Closer observation after the bird was carried ashore showed that nearly all of its lower bill was gone and that its tongue was caught between the tightly-closed valves of the still-living mollusk, and was the means of attachment of the one to the other. I cut the tongue close to the shell and released the bird which went splashing and diving away to rejoin its parents, though without tongue or lower bill it could scarcely have survived for long. I broke the clam-shell and inside found the missing bill with the remainder of the tongue attached. The ragged end of the bill made it seem plain that having been thrust into the gaping shell, which promptly and firmly closed, it had been wrenched and torn off by the efforts of the bird to free itself, but the tongue yielding elastically to the strains did not give way. The Loon was a very young one in the downy stage with pin-feathers just appearing in the wings. The mussel and bill I now have, preserved for the inspection of the curious.

Since then I have looked in many books for something about the feeding habits of Loons but have found nothing. If it is a habit of theirs to eat these mussels, my specimen simply began too early; if not, either it was too enterprising or too curious and tried to pick out the inmate from its shell gaping open upon the bottom, or else while probing for something else in the sand it accidentally pushed its lower bill into the open shell, with the results above detailed. At all events the incident may show something to those fitted to interpret it.— W. F. GANONG, *Northampton, Mass.*

'Gull Dick' Again.— 'Gull Dick' returned again (see Auk, IX, p. 227; X, p. 76; XI, p. 73; XII, p. 76) on the evening of April 6, 1895, in company with a young Gull. He being hungry was fed as usual, and after satisfying his appetite flew around the lightship and, in company with the young Gull, took his departure. I had but little hope that I should ever hear of his return. I was consequently agreeably surprised on receiving a letter from Captain Edward Fogarty, dated Oct. 2, 1895, informing me that 'Dick' had arrived that morning at sunrise for the twenty-fourth season. He looked in much better condition than last season, his feathers being smooth, with nothing of the ragged appearance he presented on his arrival last year. He seemed pretty hungry on being fed at 7 A. M. There was another Gull with him, but evidently not a friend, as 'Dick' would not allow him to partake of any of his breakfast.— GEORGE H. MACKAY, *Nantucket, Mass.*

An Early Description of Phalacrocorax dilophus.— The unpublished journal of David Thompson, of the old North West Company, Book No. 25, bound in Vol. XI, folio 46, date Thursday, May 9, 1811, when the celebrated traveller and surveyor was on certain headwaters of the Columbia River, has the following: "1 Cormorant. They are plenty. This had fine green eyes, the ball black, the eyelids marked with blue like very small beads to a button hole, and the neck and head a fine glossy bright black with a bunch of side feathers on each side the back of the head."— ELLIOTT COUES, *Washington, D. C.*

Another Harlequin Duck Record for Long Island.— A male Harlequin Duck (*Histrionicus histrionicus*) was shot at Orient Point (directly opposite Plum Island, L. I., where the species has formerly been taken) on November 11, 1895, and was mounted by a local bird stuffer. A female accompanied the male but was not procured. The male is now in the possession of Mrs. James Douglas of Orient, L. I.— W. W. WORTHINGTON, *Shelter Island Heights, N. Y.*

Olor buccinator in Western Minnesota. — It was not until 1893 that I observed this truly noble bird for the first time. Since then not less than seven specimens have come to my notice. The species is, however, not

at all common in this section. No captures were reported in 1894, while in 1895, four individuals were secured. Some of the oldest sportsmen tell me that they have observed this Swan quite regularly on Lac qui Parle during the spring and fall migrations. It is somewhat amusing to hear of the immense size of a Swan as reported by these gunners. Specimens weighing 50 pounds have been reported! The largest specimen I ever examined weighed 16 pounds and was very fat. A beautiful adult male now in my collection, shot near here on April 9, 1893, weighed only 15 pounds, but it was not fat. It measured as follows: length, 51.00; extent of wing, 77.00; wing, 28.00; tail, 7.00 inches. — ALBERT LANO, *Madison, Minn.*

White-faced Glossy Ibis Breeding in Minnesota. — I am glad to report that on June 22 and July 2, 1895, I took at Huron Lake, Jackson County, Minn., one mile from where two sets were taken in 1894, a set of three and one of four eggs (each complete) of the White-faced Glossy Ibis (*Plegadis guarauna*) from exquisitely suspended nests of rushes, in rushes, and two feet above eighteen inches of water in a large rushy arm of the lake. Four pairs of birds apparently were breeding in a colony of Black-crowned Night Herons, Coots, and Pied-billed Grebes. A single nest each of Ruddy Duck and of Red-head were found, the former fifty feet, the latter about eighty rods, from one of the Ibis nests. Two fine male Ibises were taken.

I have just received (Nov. 10) from the big woods, seventy-five miles southeast of here, a very large dark specimen of *Scotiaptex cinerea*. — P. B. PEABODY, *St. Vincent, Minn.*

Ardetta neoxena from Wisconsin. — The Field Columbian Museum has just come into possession of an additional specimen of this rare Bittern through the gift of Mr. C. E. Akeley. Mr. Akeley shot the bird, which is now before me — a mounted specimen — on Lake Koshkonong, Wis., May 22, 1893. It is a male in full plumage. Compared with the type of the species (No. 2001, Coll. Field Columbian Museum, Chicago) it agrees minutely above; below the throat and neck are just a trifle paler chestnut, and there is just a little more white on the abdomen. Mr. Akeley tells me no other examples were seen. — GEORGE K. CHERRIE, *Field Columbian Museum, Chicago, Ill.*

The King Rail Again in Maine. — An adult male King Rail (*Rallus elegans*) was shot in Falmouth, Maine, on September 19, 1895, by Mr. Walter Rich, of Portland, and is now in my collection. The township of Falmouth lies northeast of Portland, and the locality where the bird was taken was a brackish marsh known as 'The Dyke,' about two miles from the city, near the mouth of the Presumpscot River. — HENRY H. BROCK, *Portland, Me.*

Baird's Sandpiper in Maine.—During the autumn of 1895 I made but two visits to the seashore and shot but seven Peeps, yet I secured two Baird's Sandpipers (*Tringa bairdii*). I passed the forenoon of Sept. 7 on Scarborough Beach, where I found less than a dozen Peeps and shot only five. Four of these were Semipalmated Sandpipers, the other was a Baird's Sandpiper. On Sept. 14 I went to the beach again. In walking the entire length of it,—perhaps a mile and a half,—I saw but three Peeps. One of them escaped me. The others were shot together, and proved to be an *Ereunetes* and a Baird's Sandpiper.—NATHAN CLIFFORD BROWN, *Portland, Me.*

Baird's Sandpiper at East Hampton, Long Island, N. Y.—On Sept. 17, 1895, a Baird's Sandpiper (*Tringa bairdii*) was shot at East Hampton, Long Island, N. Y., and another bird of apparently the same species escaped. A Semipalmated Sandpiper was with them.—C. WHEATON VAUGHAN, *New York City.*

The 1895 Migration of Charadrius dominicus in Massachusetts.—Nantucket Island. The prevailing wind on August 13 was N. W.; on the 14th, east; on the 15th, S. W.; on the 16th, S. E.; on the 17th and 18th, S. W.; on the 19th, north; 20th, N. E. and N. W.; 21st, N. W.; 22d, N. E. to N. W.; 24th, west; 25th, N. E.; 26th, east; 27th, 28th, and 29th, N. W. The weather during the entire migrating period was pleasant with absence of storms or high winds. As a result these birds undoubtedly passed many miles outside of us, and only a few scattering Golden Plovers landed. On August 24 it was foggy outside the island with fresh southwest wind. The first Golden Plovers of the season were observed on this date, a flock of five at the west end of the island, flying towards the west. Two other single birds were seen at the eastern end of the island. On August 31 I saw a lone Golden Plover, and on September 1 a flock of four, one of which was shot, this being the first one taken this season. Later in the day four others were shot, three of which were *young* birds. In all twenty-four Golden Plovers were seen. On September 9 a flock of forty Plovers were seen at the west end of the island. This flock was also seen at the east end, and was probably the only *flock* on the island. On September 19 I saw seven Plovers in a certain preserved field near the centre of the island. I also saw three others, one of which was a young bird. These a friend and I shot. I heard of a small bunch of Plovers having been sent up from Tuckernuck on this date, but I did not see them. Up to September 15 only one Golden Plover had been taken on Tuckernuck Island.

Not an Eskimo Curlew (*Numenius borealis*) has been seen as far as I have been able to learn this season. I have made repeated inquiries in the large Faneuil Hall Market in Boston, but have failed to learn of any Eskimo Curlew, and of but a few Golden Plover which had been

taken on Cape Cod and at Ipswich, Mass. This meagre record is all I have to report for the season of 1895.—GEORGE H. MACKAY, *Nantucket, Mass.*

Habits of the Valley Partridge.—While collecting birds and mammals on the upper head of the San Diego River, near Lakeside, San Diego County, California, on June 6, 1895, I walked unsuspectingly upon a bevy of Valley Partridges (*Callipepla californica vallicola*), consisting of an old male and female with about fifteen young ones. They were in a crevice of a fallen cottonwood-tree. On my stepping almost upon them, the male bird ran out a few feet and raised a loud call of *ca-ra-ho;* while the female uttered short calls, addressed to her brood. Seeing me, she picked up a young one between her legs, beat the ground sharply with her wings, and made towards the bush, in short jumps, holding the little one tightly between her legs, the remainder of the brood following her.

Can any reader of 'The Auk' tell me if this is a common practice with this species?—FRANK XAVIER HOLZNER, *San Diego, Cal.*

Additional Records of the Passenger Pigeon (*Ectopistes migratorius*) **in Wisconsin and Illinois.**—I am indebted to my friend, Mr. John L. Stockton, of Highland Park, Ill., for information regarding the occurrence of this Pigeon in Wisconsin. While trout fishing on the Little Oconto River in the Reservation of the Menominee Indians Mr. Stockton saw, early in June, 1895, a flock of some ten Pigeons for several consecutive days near his camp. They were first seen while alighting near the bank of the river, where they had evidently come to drink. I am very glad to say that they were not molested.

Mr. John F. Ferry of Lake Forest, Ill., has kindly notified me of the capture of a young female which was killed in that town on August 7, 1895. The bird was brought to him by a boy who had shot it with a rifle ball, and although in a mutilated condition he preserved it for his collection.

I have recently received a letter from Dr. H. V. Ogden, Milwaukee, Wis., informing me of the capture of a young female Pigeon which was shot by Dr. Ernest Copeland on the 1st of October, 1895. These gentlemen were camping at the time in the northeast corner of Delta County, Mich. (Northern Peninsula), in the large hardwood forest that runs through that part of the State. They saw no other of the species.—RUTHVEN DEANE, *Chicago, Ill.*

The Golden Eagle in New Jersey.—Authentic records of the recent occurrence of the Golden Eagle (*Aquila chrysaëtos*) in the Eastern States are so rare that each one seems worthy of note. The following instance happened in New Jersey, on the Crosswicks Creek, about seven miles south of Trenton. The bird was captured by my friend the Rev. W. E. Daw, now of Towanda, Pa., in the late fall of 1888, as near as can now be ascertained. I append part of a recent communication received from him in regard to the Eagle, in answer to my note of inquiry for particulars

regarding it. Efforts made to obtain more accurate information from the taxidermist as to the exact date of capture have entirely failed.

"In regard to the 'bird of freedom' my memory is very rusty as to the time when it was shot, but the place I remember distinctly. I was sitting in my boat up Crosswicks Creek, quietly waiting for squirrels in the chestnut woods of Alfred Reid (I being somewhat hidden by the bushes to which the boat was tied), when the Eagle sailed overhead, and was about to light in a tree when I fired a charge of duck shot and broke his wing near the shoulder. He fell in the water and was floating down stream when I fired squirrel shot in his head and he was still. I have looked up my diary but can find no record of the date when I shot him, but think it was late in the fall in 1888; time of day, about five o'clock. The bird is still in my possession. He measured 6 feet 4 inches from tip to tip. I am positive he is a Golden Eagle for he is feathered to the toes and has the characteristic arrow-head feathers on head."—WILLIAM C. BRAISLIN, *Brooklyn, N. Y.*

The Golden Eagle in Maine.—On August 19, 1895, Professor F. L. Harvey of the Maine State College and myself were making the ascent of Sandy River Mountain in northwest Maine. When we had nearly reached the summit of the mountain, we heard the cry of some raptorial bird, and a Golden Eagle (*Aquila chrysaëtos*) soon appeared and flew around us uttering its cry. We remained at the top of the mountain for some time, during which the Eagle remained in our vicinity and seemed much disturbed at our presence. We both concluded that the bird had young somewhere in our vicinity, and as the south side of the mountain was a steep cliff, there is no reasonable doubt but that the bird had a nest somewhere on the cliff. When it uttered its cry we could hear answering cries from the direction of the cliff, thus making it evident that the bird had young in the vicinity.—ORA W. KNIGHT, *Bangor, Maine.*

A New Long Island, N. Y., Record for the Red-bellied Woodpecker (*Melanerpes carolinus*).—When visiting Mr. C. DuBois Wagstaff at Babylon, N. Y., last fall, I noticed a well-mounted specimen of this southern Woodpecker among a collection of local birds, and on inquiring the particulars of its capture, Mr. Wagstaff informed me that he shot it upon a locust tree close to the house, a year or two after the war. A specimen was shot by me in Flushing, N. Y., in October 1870, which I understood was the second record for Long Island, N. Y., but this bird antedates my specimen some years. The specimen in the collection of Mr. Geo. N. Lawrence, which was taken at Raynor South by a Mr. Ward, was killed many years ago and was, I believe, the first record for this locality.—ROBERT B. LAWRENCE, *New York City.*

The Deltoid Muscle in the Swifts.—In examjning a number of Swifts recently I was struck with the fact that our common Chimney Swift (*Chætura pelagica*) lacks the deltoid muscle. This is interesting as being

another instance of the specialization of the Swifts along various lines, and also as showing the structural variation among different members of the group. In *Macropteryx* the deltoid is well-developed and arises from two heads as in the Passeres. In *Cypseloides*, *Micropus*, *Collocalia*, and *Tachornis*, the deltoid is single and reduced in size, being proportionally smallest in *Tachornis*. Finally, as stated above, the deltoid is quite absent in *Chætura pelagica*, this being a step beyond what is found among the Hummingbirds, where the deltoid is present though small. It would be interesting to know if other members of the genus *Chætura* lack the deltoid, and also what is the condition of this muscle in *Hemiprocne*.

Dr. Shufeldt's figure of the wing muscles of *Chætura* (Linn. Soc. Journ. Zool. XX, pl. 22, fig. 29) shows that he too found this muscle absent, although nothing is said about it in the text.

I would be extremely grateful to any one for alcoholic specimens of *Hemiprocne* or any species of *Chætura* save *pelagica*.— F. A. Lucas, *Washington, D. C.*

The Scissor-tailed Flycatcher in Virginia and Maryland.— My friend, Mr. P. Henry Azlett, of Azlett, King William County, Virginia, recently sent me for identification an adult specimen of this bird (*Milvulus forficatus*) which was shot by a farmer near that place on August 31, 1895. The bird is in poor, half moulted condition. This is, I believe, the fourth record of this bird for Virginia, and it is of course possible that some or all were escaped cage birds. The late Mr. O. N. Bryan of Bryan's Point, Maryland, on the Potomac River just below Washington, once told me that in August of a year about the close of the war while he was in a deep ravine near his home, called Johnson's Gully, he was overtaken by a severe storm, and saw one of these birds which had evidently sought the seclusion of the same place for shelter.— William Palmer, *Washington, D. C.*

The Raven in Illinois.— I wish to place on record the capture of a specimen of *Corvus corax principalis*, at Mendosia, Ill., Oct. 23, 1892. I was at that time making a collection of birds for the State, and was living with the crew of the United States Fish Commission. The bird had been seen for a week or more previous to this time, flying about Lake Mendosia, a body of water opening into the Illinois River. The lake is seven miles long and three quarters of a mile wide. A number of attempts had been made by market shooters to obtain the bird for me, but they could not get within gunshot, and so were unsuccessful.

One day, however, as I was passing through a herd of cattle, the bird flew very low and I obtained it with a charge of number five shot. The specimen, a female, had been feeding upon carrion, and the odor from the body was as disagreeable as that from *Cathartes aura*. The plumage is exceptionally fine; the body is deep blue black; from the secondaries to the primary coverts, the color is rich brownish bronze. The following

measurements were taken: extent of wings, 4 feet 3 inches; length, 23 inches; tarsus, 2.20; tail, 10.00; culmen, 3.00; lanceolate feathers of throat, 2.70.

The specimen was sent to Mr. Ridgway for positive identification, and is, so far as known, the only *C. c. principalis* captured in Illinois. The specimen is now in the collection of the Chicago Academy of Sciences.—FRANK M. WOODRUFF, *Chicago, Ill.*

The Ipswich Sparrow.—A Correction.—Dr. Jonathan Dwight, Jr.'s, interesting monograph of the Ipswich Sparrow[1] brings into prominence a boyish and ill-advised note on this bird which I published in the 'Bulletin' of the Nuttall Ornithological Club (Vol. II, pp. 27, 28). I regret that I have left the note so long unexpunged; but it is not too late to mend the matter, and I withdraw the record now.—NATHAN CLIFFORD BROWN, *Portland, Me.*

Second Occurrence of the Lark Sparrow in Virginia.—While collecting on the 'Dry Isaacs' (one of the sandy islets on the ocean side of Cape Charles) on August 24, 1895, I flushed from the grass an immature male *Chondestes grammacus*, which after considerable trouble, owing to its wildness, I secured.—WILLIAM PALMER, *Washington, D. C.*

The Cape May Warbler (*Dendroica tigrina*) in the Maritime Portions of South Carolina.—On September 13, 1895, I shot an adult male Cape May Warbler from the top of a live-oak tree. It was in company with many other Warblers, all being busily engaged searching for insects. The next day I procured another male which I shot from the same tree. Previous to this date there was much stormy weather accompanied with heavy rain which lasted for eight days. The Cape May Warbler is a very rare bird in the maritime districts of South Carolina, and these two are the only individuals which have ever been taken on the seaboard.—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

The Carolina Wren in Connecticut.—While collecting in a grove about five miles from Bridgeport, April 20, 1895, Dr. E. H. Eames and the writer found two Carolina Wrens (*Thryothorus ludovicianus*) occupied in running about a stone wall. On June 13, we found both old birds and shot two young ones. The young, which had probably been out of the nest a week, had only a faint chirp and were not as active as the adults.—H. H. TAYLOR, *Bridgeport, Conn.*

The Red-breasted Nuthatch (*Sitta canadensis*) on Long Island, South Carolina.—I shot a beautiful adult male of this Nuthatch within ten yards of the front beach on November 14, 1895, on Long Island, S. C. It was

[1] Memoirs of the Nuttall Ornithological Club, No. II. Cambridge, Mass., August, 1895.

about one o'clock P. M., when, as I was sitting on some drift wood where the tide was coming in, I heard just over me *hink, hink, hink.* I had never heard this note before but I remembered Audubon's description, and truly there was the Red-breasted Nuthatch, which I had looked for in vain for twelve years, directly over me. There were two of them. The male I secured, but the female, which I badly wounded, I could not find. This species has never been taken in the maritime districts before, but has been recorded from Chester County, and my friend Mr. Ellison A. Smyth, Jr., shot one many years ago in Clarendon County. I have seen Mr. Smyth's bird and I beleive it was recorded in 'Random Notes on Natural History.'— ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

The Dwarf Thrush in Colorado.— A specimen of the Dwarf Thrush (*Turdus aonalaschkæ*) was taken October 6, 1895, at Magnolia, a small mining town some eight miles west of Boulder, Colorado. This is the first record of the species for this State. To make sure of the identification the bird was sent to Mr. Ridgway, who pronounced it a typical example of this species.— U. A. SPRAGUE, *Boulder, Col.*

Food of Woodpeckers and Flycatchers.— Southern California seems well adapted to the birds of the family Picidæ. I have been at Claremont, Los Angeles County, less than two years, and have had little time to work with birds, yet I have secured the following species: *Dryobates villosus harrisii, Xenopicus albolarvatus, Sphyrapicus ruber, Sphyrapicus thyroideus, Melanerpes formicivorus bairdii, Melanerpes torquatus,* and *Colaptes cafer.* In the stomach of all these I have found insects, and often more or less bark. *Melanerpes formicivorus bairdii* has the habit of storing acorns in trees, presumably for future use as food. They gather the acorns and place them in holes which have been previously chiseled out by use of their bills. I have heard reliable observers state that they have frequently seen them eating these acorns during the winter months. *Sphyrapicus ruber* is the Sapsucker of southern California. It taps fruit trees, especially prune and apricot, and evergreens. Its mischief seems much more serious than that of its congener of the East, as trees are frequently killed by reason of its punctures, although these latter are more distant and less numerous. I never knew a tree to be killed by the Sapsuckers in Michigan. The evil in California is wrought in summer when the dry season has enfeebled the tree, and this is a possible explanation of the more serious harm to the trees of this region.

I have also been interested in the species of the family Tyrannidæ. I have taken at Claremont and the adjacent cañons the following species: *Tyrannus verticalis, Tyrannus vociferans, Myiarchus cinerascens, Sayornis sayi, Sayornis nigricans, Contopus borealis, Empidonax pusillus,* and *Empidonax difficilis.* In the stomach of all these were found insects; but

twice I found a strange exception to the usual food of the birds of this family. In two cases I found green olives in the stomach of *Tyrannus verticalis*, and in nearly all birds of the common species *Sayornis nigricans*, killed in winter, I have found pepper berries. *Tyrannus verticalis* is the Bee-martin of California. It flies from its perch near the apiary, captures its prey, then flies back to its perch, making some rapid motion, after which it swallows the bee. I have seen a toad swallow five bees in quick succession; then have killed the toad to find five bee stings sticking to its throat, and as many stingless bees in its stomach. Does the throat of the Kingbird become a sort of pin-cushion for bee stings, or does this bird extract the stings as it manipulates the bee before swallowing? I am eagerly waiting to settle this interesting question. I have taken worker bees from the stomach of the eastern Kingbird (*Tyrannus tyrannus*) but never noticed regarding the disposition of the stings. None of the Kingbirds which I have taken in California have had bees in their stomach, though I am told by good observers that this bird does capture and swallow bees.— A. J. Cook, *Claremont, Cal.*

Rare Visitors to the Connecticut River Valley in Massachusetts in 1895.— Seiurus motacilla.— On the 28th day of July, a Louisiana Water Thrush was found dead, on the piazza of a house in the central part of Springfield, undoubtedly having been killed by flying against a window. The capture of a specimen by Dr. J. A. Allen on Mount Tom in April, 1869, is the only other record of its occurrence here.

Rallus elegans.— October 19, a young King Rail was taken in Longmeadow. It was found in the *Zizania aquatica* which grows so profusely along the banks of the Connecticut River. The presence of this species in this part of the valley, I believe, has never before been noted; and the Clapper Rail (*Rallus longirostris crepitans*) has been captured here but twice.

Calcarius lapponicus.— A Lapland Longspur was shot in Longmeadow, November 28.— Robert O. Morris, *Springfield, Mass.*

A Correction.— In 'The Auk' for April, 1892 (Vol. IX, p. 144), in a note on the 'Habits of the Black-bellied Plover in Massachusetts,' I stated it as my conviction that the *adults* do not assume the gray and white winter plumage after having attained to the full adult spring plumage. I also expressed the same opinion in regard to the plumage of the *adult* Knots in 'The Auk' for January, 1893 (Vol. X, p. 32) in 'Observations on the Knot, *Tringa canutus*.' I now desire to withdraw both of these opinions, as I am inclined to doubt, although not yet *certain*, the correctness of such views, but believe it much better to so state, rather than let a probable error remain to misguide others.— George H. Mackay, *Nantucket, Mass.*

Notes on Long Island Birds.— Melospiza lincolni.— In the Parkville woods along the edge of a thicket, a small, active sparrow was seen on the morning of Sept. 28, 1895. A recent moderate fall of temperature made the morning an animated scene of bird-migration, and this bird would hardly have attracted attention among many other small birds had it not been for his alert and ill-at-ease manner. This fact alone led me to think him not a Song nor a Savanna Sparrow, either of which he might readily have been mistaken for. He made no sound by means of which aid could be gained in his identification, but stood on the horizontal limb of a small tree, with jerking tail and erected occipital feathers, as though resenting the gaze of an intruder. It proved a Lincoln's Sparrow. The specimen is an adult female.

Vireo gilvus.— On the morning of Sept. 16, 1895, while on the Boulevard just beyond Prospect Park, Brooklyn, I was attracted by a sustained melodious warble, which for the moment I was unable to place, but which I afterward remembered having been formerly fairly familiar with in New Jersey as the supposed song of the Warbling Vireo. I had never verified this supposition as it had always been heard in the shade trees of village streets. In this case the bird was in one of the outer of the four rows of shade trees which extend the length of the Boulevard. At my approach it flew into one of a cross row of maple trees, about forty yards from that in which it had first been heard, where it was secured. It proved to be an adult male Warbling Vireo—a bird which on Long Island I had often searched and listened for in vain. For some reason, this bird on Long Island is either rare or often overlooked. The latter seems the less likely in that its song is very characteristic, as well as being one of the sweetest, and most apt to attract attention of all our singing birds. Its song is a refrain of trilled notes, varying up-hill and down in harmonious modulations, with only the merest pause between each effort of, it must be, twenty-five or thirty notes.

Helminthophila peregrina.— On the same morning on which the Lincoln's Sparrow was obtained (Sept. 28, 1895), and but a few minutes later, a specimen quite as rare was captured; namely, the Tennessee Warbler. This bird was in the woods and when first seen was on the ground, from whence it flew into the low pendant branches of a tree, about four feet from the ground. No bird-note that I could identify as his was heard. The specimen is an adult male.

Dendroica tigrina.— At Canaisee Village, Sept. 12, 1894, a Warbler of rather obscure markings was taken in the edge of a little grove of trees which stands back but a few yards from the salt-grass meadows. This and a male Black-throated Blue Warbler were seen in the lower branches of a thickly foliaged tree overhanging a heavy undergrowth of blackberry brambles and tall weeds. It was rather carelessly labeled as a Magnolia Warbler, which, of course, it does not in the least resemble. It was rediscovered and my diagnosis of it as the Cape May Warbler was kindly verified by Mr. Chapman. The specimen is an adult female.

Dendroica castanea.— In the outskirts of the village of Flatbush, now a part of Brooklyn, on the morning of Sept. 24, 1895, a number of Warblers, chiefly Black-polls, was seen in a row of shade trees, not far from the Boulevard. Among them was a Bay-breasted Warbler, which was secured. It is an immature male with the buffy markings on the sides well developed.—WILLIAM C. BRAISLIN. *Brooklyn, N. Y.*

Nantucket and Muskeget Island Notes. — Falco sparverius.— Nantucket, Sept. 22, 1895, I observed eight American Sparrow Hawks, in pairs, migrants; none noted before this season. Usually see a few about this time.

Asio accipitrinus.— Muskeget Island, June 2, 1895. Mr. John R. Sandsbury informs me that he discovered the nest of a Short-eared Owl on the northeast side of the island containing three young birds in the down. The nest was placed at the foot of a bunch of beach-grass (*Ammophila arundinacea*) and partially concealed. It was raised about four inches above the sand; only one old bird was seen, it having been frightened off the nest. On July 7 Mr. Sandsbury and I saw one adult bird.

Symphemia semipalmata.— Nantucket. On May 2, 1895, Mr. Charles E. Snow informed me he saw five Willets at the Hummock Pond.

Totanus solitarius.— In the vicinity of the Hummock Pond, more Solitary Sandpipers have been noted this season than for a number of years. On Aug. 29, 1895, one female was taken; on Sept. 9, three more; Sept. 10, another; on Sept. 29, I saw still another. They were formerly quite abundant, but are now scarce.

Ereunetes occidentalis.— Aug. 29, 1895. Four birds taken at the Hummock Pond, three of which proved on dissection to be females. These are the only ones I have observed here.

Macrorhamphus scolopaceus?— Aug. 29, 1895. A male bird (by dissection) was taken at the Hummock Pond. This being a young bird of the year, it is next to impossible to *certainly* identify it. *M. griseus* is not uncommon here, but this is the *first* instance in which I have taken what I suppose to be *M. scolopaceus.*

Micropalama himantopus.— On Aug. 29, 1895, a female was taken at Hummock Pond. On Aug. 31, I shot another at the same place. This pond is a very large one. On Aug. 29, with some friends, aided by a horse and scoop, I dug a trench to the ocean, thereby draining it, hoping that the margins thus exposed would offer an inducement for some of the migrants to tarry.

Oidemia deglandi.— Sept. 28, 1895. A very large flock of White-winged Scoters were observed on the edge of Squash Meadow Shoal.

Larus argentatus smithsonianus.— Muskeget Island, Nov. 1, 1895. The very large increase in the number of Herring Gulls in this vicinity has been remarked by all; nothing similar has been observed for years. The northeast point of Muskeget, as also the shoals about Gravelly Island, are covered with them in the morning, indicating that they roost there.—GEORGE H. MACKAY, *Nantucket, Mass.*

Gätke's Birds of Heligoland.—No work since the days of Audubon has come to my notice which has interested me to the same extent as this wonderfully instructive book. One reason for this is that the knowledge I have acquired regarding some of our birds has been gleaned during my long experience as a sportsman on the Atlantic seaboard. (It is now many years since I learned that the most successful way of securing birds is through a knowledge of their habits.) I cannot therefore fail to recognize and appreciate how dwarfed become the observations of the ordinary observer in comparison with the life work of Mr. Gätke, who has for half a century so patiently gathered the facts he now sets before the ornithologists of both continents. It seems impossible to read Gätke's book without being impressed with the importance of his many years of painstaking research, and his originality and boldness of thought. As Dr. Coues has rightly written in his review of this book in the last number of 'The Auk' (Vol. XII, p. 322), 1895: "There is no Heligoland but Heligoland, and Gätke is its prophet." It is nevertheless equally true that all of the statements contained in this work cannot be accepted as facts, as far as they relate to North American birds. For this reason I desire to call the attention of American readers of the book, as well as others, to certain of the author's claims regarding some American birds which he refers to in illustration of certain of his statements. I do this with the greatest deference.

On page 16, five lines from the foot of the page, we read: "When one thinks of numbers of individuals such as these, which cannot be grasped by human intelligence, it seems absurd to talk of a conceivable diminution in the number of birds being effected through the agency of man." In North America, such a statement, in my opinion, can scarcely be assented to, as witness the destruction of American Golden Plovers (*Charadrius dominicus*), Eskimo Curlews (*Numenius borealis*), and Bartramian Sandpipers (*Bartramia longicauda*), as also other species, in the Mississippi Valley during the spring migration to their northern breeding grounds. Also witness the fabulous quantities of eggs of the Water-birds taken in the far Northwest, as also on the Northeast coasts of North America.

On page 44 he says: "We have stated in the course of this chapter that birds perform the journey from their winter quarters to the breeding stations, if possible, in one uninterrupted flight." In North America, as far as my observation shows, the reverse is the case with some of the Water-birds. The American Golden Plovers, Eskimo Curlews, Bartramian Sandpipers, and Black-bellied Plovers (*Charadrius squatarola*) all linger in the Mississippi Valley, and the last named on the Atlantic coast, on their way to their breeding grounds.

On page 51, in writing of Diving Ducks, etc., he says: "All these birds when alive and undisturbed (as also do their carcases) float so lightly on the water that they scarcely make any noticeable depression in it." I have always regarded the three varieties of Scoters (*Oidemia americana*,

O. deglandi, O. perspicillata), the American Eider (*Somateria dresseri*), Double-crested Cormorant (*Phalacrocorax dilophus*), Canvas-back Duck (*Aythya vallisneria*), and Loon (*Urinator imber*), as well as some others, as noticeably deep swimmers, and not very buoyant when dead and floating.

On page 69: "The distance between the coasts of the two countries [Labrador and northern Brazil], amounts to three thousand two hundred geographical miles, and since there is along this whole stretch of route not a single point on which the travellers could alight for rest, they are obliged to perform the whole length of this enormous journey in one uninterrupted flight." After coming down from the shores of the Arctic Ocean and the region above forest growth, their breeding home, the American Golden Plovers (as do also the Eskimo Curlews) collect in the vicinity of Labrador, where they rest a while, becoming very fat. From there they set out on their prolonged southern migration, steering boldly out to sea after leaving Nova Scotia. I believe they can, under favorable conditions, make the entire distance to their objective point, the Argentine Republic and Patagonia, in practically one flight, but if during such passage they require rest, they can easily obtain it by alighting on the ocean. This they do, being good swimmers. Neither are they exceptional in this respect, many others doing the same. As an instance in illustration one of my shooting acquaintances while fishing one day about three miles off the coast of Massachusetts observed a flock of a dozen or fifteen Pectoral Sandpipers (*Tringa maculata*) passing; on whistling to them they abruptly turned from their course in response to his call, and flying towards his boat, whirled up into the wind and *alighted on the ocean*. After swimming around a short time they arose without effort, and, each bird giving its feathers a shake, proceeded on their way.

On page 101, he quotes Palmen as saying: "Direct observations in nature have yielded the result that among flocks of migrants the older and stronger individuals are in general the leaders of the migratory host"; and adds: "He [Palmen] could not, however, have begun the treatment of this question with a more unfortunate assertion; for there is no one who has ever made observations which might support this view." I have made observations for a good many years on the Atlantic coast of North America, and I have particularly noticed many times during the migration northward of the Surf Scoters (*Oidemia perspicillata*) in April, that many of the larger flocks of fifty to one hundred birds, are led by a full plumaged adult drake. The white markings on the head and neck, highly colored bill, and glossy black plumage render a mistake in identification unlikely.

Page 102, he thus formulates his conclusions on this subject: "1. That under normal conditions in the case of the three hundred and ninety-six species occurring here, with the exception of a single one, the autumn migration is initiated by the young birds, from about six to eight weeks after leaving their nests. 2. That the parents of these young individuals

do not follow till one or two months later." Taking the American Golden Plover again as an illustration, I must say that without a single exception my observations show results directly opposite. the adults always preceding the younger birds, usually from one to three weeks. It is not unusual for the adults and young to migrate together, but I have no knowledge of the young arriving first on the New England coast. A few examples from my note book may not be out of place. On the night of Sept. 11, 1889, amidst rain, fog, and southeast wind, Eskimo Curlews and Golden Plovers, with a few young birds of the latter, landed on Nantucket Island, Massachusetts. On August 25, wind fresh south by east, and night of the 26th, 1892, there was a large flight of adult American Golden Plovers (the second large flight of this month), some two hundred and seventy-five of which were shot. It was not until September 1 that the first young bird of the season was noted; the first flock (about 25 birds) was noticed on September 3, two of which were shot. On September 15, I noticed two flocks of young birds containing thirty and twenty-five birds respectively. The larger flock, after mounting high up in a spiral way and circling, headed southwest on migration. There was not one black and white breasted bird in that flock, and this goes to prove that these young birds can, if necessary, migrate by themselves. But according to my observations, most of the flocks of young birds that land on the island of Nantucket while on their southern migration (they never return via the Atlantic coast in the spring) contain one or more adults, that is, until *late* in the season and the old birds have passed by, at which time we find few, if any, adults in the flocks with the young birds. Neither do the young birds seem to care to join at this later date with the adults, if there are any living in the vicinity. On September 11, 1894, I shot eleven young birds, the first noted that season. They must have landed the previous night, as all those previously seen were black and white breasted birds, of which I shot fifteen on the 27th of August. In 1888, up to September 8, a friend and I had shot seventy-three black and white breasted birds, but did not see a young bird until that date. On the night of September 24 or 25, 1882, over one thousand young Golden Plovers (Palebellies) landed on Nantucket Island during a northeast rain storm. I shot forty-nine of them the next day. Not a single black and white breasted bird passed me that day, nor did I hear of one being shot. I instance this out of regard for Mr. Gätke's view, that the young birds can and do migrate by themselves. I might give many more instances of the case in point, but they would be only repetitions with other dates.

Again, page 471, with reference to his statements respecting *Charadrius squatarola*, I may say that with us, the adults arrive first in the middle of July, while it is not usual to see more than scattering young birds before the first week in September (see Auk, Vol. X, p. 79). Again (see Gätke, page 499), the adult Knots (*Tringa canutus*) with us precede the young, the former appearing during the latter part of July, the young from the latter part of August to September 10.

On this coast, as far as I know, the adults of the Eskimo Curlew (*Numenius borealis*) arrive first. I merely mention it, as this bird is very closely allied to the Whimbrel (*Numenius phæopus*) (see Gätke, page 460). This is also the case with the Hudsonian Curlew.

Judging from the twenty-five years' shooting experience of one of my friends at one of the larger fresh water ponds in Massachusetts, where the shooting of Canada Geese (*Branta canadensis*) has been made a specialty, it appears that they migrate in broods. It makes little difference how many birds may be travelling in company, for on alighting in the pond (unless in very stormy weather) they separate, each gander and goose with their young keeping together, the gander leading.

My observations in relation to rate of speed and length of flight lead me to believe that under very favorable conditions, such as flying before a very strong wind, such birds as the American Golden Plover and Eskimo Curlew for instance, will attain a speed of one hundred and fifty to two hundred miles an hour. It is consequently not inconceivable to me that under such favorable conditions they are able to reach the Argentine Republic or Patagonia in one flight, or with a possible rest on the ocean. Hence I cannot regard a flight, under favorable circumstances across the Atlantic ocean, as any great hardship to many of our birds.— GEORGE H. MACKAY, *Nantucket, Mass.*

CORRESPONDENCE.

The Soaring of Birds and Currents of Air.

TO THE EDITORS OF 'THE AUK':—

Dear Sirs,—Allow me to call the attention of ornithologists to the following question in which ornithology and meteorology join hands.

In recent years, wind vanes have been devised to indicate the vertical component of the wind's motion, and it has been shown that there is a significant variation in the strength of this component in various kinds of weather. It has long been known that the diurnal variation of wind velocity on land was due to local convectional ascending and descending currents, these varying greatly at different times and places, according to the nature of the land surface, the strength of sunshine, etc.

In recent years, attention has frequently been called to the importance of vertical currents in air movement as an aid in the flight of birds, Professor Langley's studies being perhaps the most important in this direction.

Now the question that I should like to have jointly considered by ornithologists and meteorologists, is whether there is a correlated variation in the flight of soaring birds and in the activity of local convectional movements, or other vertical movements. Do soaring birds float for a longer time without flapping wings in weather when convectional ascending currents are indicated, or in localities where disorderly ascensional currents, prompted by irregularity in the land surface, may be expected? A pair of observers, one attending to the behavior of birds, the other following out the processes of the winds, might perhaps discover some interesting correlations in this field of study. The work might be commended to semi-invalids, who are sent South in search of mild weather and gentle occupation. Could anything be more genially lazy than lying on one's back in the sun, and counting the turns of a Turkey Buzzard?

Very truly yours,

W. M. Davis,
Cambridge, Mass.

November 3, 1895.

NOTES AND NEWS.

Thomas Henry Huxley, an Honorary Member of the American Ornithologists' Union, died June 29, 1895, at his home in Eastbourne, England, in the 71st year of his age, having been born at Ealing, Middlesex, England, May 4, 1825. His early education was obtained partly at home and in part "at the semi-public school at Ealing, of which his father was one of the masters." In 1842, he entered the medical school of Charing Cross Hospital, and in 1845 passed the first M. B. examination at the University of London. The following year he joined the medical service of the Royal Navy, and was soon after assigned to the post of assistant surgeon to H. M. S. 'Rattlesnake,' which sailed from England late in the year 1846 for a surveying cruise in the Southern Seas, and thence around the world, returning to England in 1850. In recognition of his scientific work during this voyage, he was elected in June, 1851, a fellow of the Royal Society. He left the naval service in 1853, and in 1854 was appointed naturalist to the Geological Survey, and also made professor of natural history in the Government School of Mines, which latter position he occupied till 1885. From 1863 to 1869 he was Hunterian professor at the Royal College of Surgeons. He was president of the Geological Society of London in 1869 and 1870, president of the British Association for the Advancement of Science in 1870, and of the Royal

Society in 1883. Between 1870 and 1885, when impaired health compelled his retirement, he filled numerous government positions, including, from 1881 to 1885, that of Inspector of Salmon Fisheries.

To quote from Professor Haeckel's memorable notice of Professor Huxley's work, published in 1874 (Nature, IX, Feb. 5, 1874, pp. 257, 258): "Indeed if at the present we run over the names distinguished in the several sciences into which Natural Knowledge may be divided — in Physics, in Chemistry, in Botany, in Zoology — we find but few investigators who can be said to have mastered the whole range of any one of them. Among the few we must place Thomas Henry Huxley, the distinguished British investigator, who at the present time justly ranks as the first zoologist among his countrymen. When we say the first zoologist, we give the widest and fullest signification to the word 'zoology' which the latest developments of this science demand. Zoology is, in this sense, the entire biology of animals; and we accordingly consider as essential parts of it the whole field of Animal Morphology and Physiology, including not only Comparative Anatomy and Embryology, but also Systematic Zoology, Palæontology and Zoological Philosophy. We look upon it as a special merit in Prof. Huxley that he has a thoroughly broad conception of the science in which he labors, and that, with a most careful and empirical acquaintance with individual phenomena, he combines a clear philosophical appreciation of general relations.

"When we consider the long series of distinguished memoirs with which, during the last quarter of a century, Prof. Huxley has enriched zoological literature, we find that in each of the larger divisions of the animal kingdom we are indebted to him for important discoveries. From the lowest animals, he has gradually extended his investigations up to the highest, and even to man. His earlier labors were, for the most part, occupied with the lower marine animals, especially with the pelagic organisms swimming at the surface of the open sea. . . . But it is the comparative anatomy and classification of the Vertebrata which, during the last ten years, he has especially studied and advanced. . . . After Charles Darwin had, in 1859, reconstructed this most important biological theory, and by his epoch-making theory of Natural Selection placed it on an entirely new foundation, Huxley was the first who extended it to man, and in 1863, in his celebrated three Lectures on 'Man's Place in Nature,' admirably worked out its most important developments. With luminous clearness, and convincing certainty, he has here established the fundamental law, that, in every respect, the anatomical differences between man and the highest apes are of less value than those between the highest and the lowest apes."

Huxley's work on birds may be regarded as an incident in his general work on the morphology and classification of Vertebrates, although his contributions to ornithological literature place him in the front rank among investigators of the affinities and relationships of the various groups of birds to each other, and of birds as a class to other Vertebrates;

for in the ordinary sense of the term Huxley was not an ornithologist. As early as 1864 he marshalled birds with reptiles under one grand division, or 'province' of the Vertebrata under the name Sauropsida, opposed on the one hand to the Mammalia, and on the other to the Ichthyopsida, consisting of fishes and amphibians. His principal and epoch-making ornithological memoir appeared in 1867, entitled 'On the Classification of Birds; and on the Taxonomic Value of the Modifications of certain of the Cranial Bones observable in that Class' (P. Z. S., 1867, pp. 415–472, with 36 figs. in text; see also Ibis, 1868, pp. 357–362). This was followed in 1868 by his important paper 'On the Classification and Distribution of the Alectoromorphæ and Heteromorphæ (P. Z. S., 1868, pp. 294–319, with a map and 16 figs. in text). These two papers may be considered as his principal special contributions to the literature of ornithology. While a synopsis of these papers is perhaps uncalled for in this connection, it is of interest to note the insistence — then a novel idea — here made (P. Z. S., 1867, p. 415) "that in all the essential and fundamental points of their structure" birds so nearly approach reptiles "that the phrase 'Birds are greatly modified Reptiles' would hardly be an exaggerated expression of the closeness of that resemblance." Professor Huxley's classification, as is well known, was based primarily, and, in case of many of the minor groups, almost solely on the palatal structure, thus giving prominence to an unquestionably important set of characters previously almost overlooked. As is inevitably the case with any classification based on a single set of characters, the allocations here and there are bound to be more or less unnatural, and Huxley's scheme is not an exception. Yet the importance of his memoirs can scarcely be overrated, and their influence has been far-reaching.

In common with most of the learned societies of the world, the American Ornithologists' Union has honored itself in its attempt to show respect to Professor Huxley by enrolling him in its list of Honorary Members,— as much perhaps in recognition of his eminent attainments in all fields of biological research as in the special field of ornithology.

Any notice of this great man would be reprehensibly incomplete without some further reference to his wonderful influence upon the scientific thought of his time, and his rare gifts as a writer and lecturer. In his battles for evolution he has upheld unflinchingly what he believed to be scientific truth, and with a boldness and efficiency that has no parallel. As a fitting conclusion to this brief notice may be added the following selections from his own words: "To promote the increase of natural knowledge and to forward the application of scientific methods of investigation to all the problems of life to the best of my ability, in the conviction which has grown with my growth and strengthened with my strength, that there is no alleviation for the sufferings of mankind except veracity of thought and of action, and the resolute facing of the world as it is when the garment of make-believe by which pious hands have hidden its ugliest features is stripped off.

"It is with this intent that I have subordinated any reasonable, or unreasonable, ambition for scientific fame which I may have permitted myself to entertain to other ends; to the popularization of science; to the development and organization of scientific education; to the endless series of battles and skirmishes over evolution; and to untiring opposition to that ecclesiastical spirit, that clericalism, which in England, as everywhere else, and to whatever denomination it may belong, is the deadly enemy of science.

"In striving for the attainment of these objects, I have been but one among many, and I shall be well content to be remembered, or even not remembered, as such."

MR. HENRY SEEBOHM, an Honorary Member of the American Ornithologists' Union, died at his home in London, Nov. 26, 1895, after a short illness, although he had been in weak health since an attack of influenza some six months previously. According to a recent notice in the London 'Times,' Mr. Seebohm "came of an old Quaker family, and was born at Bradford, in Yorkshire, where as a child he showed an extraordinary love of natural history, and used to study every kind of animal which was to be met with on his father's property. He was educated at the Friends' School at York, where his love of nature still showed itself in the collections of ferns, birds, and their eggs, which he began to make at the time. For many years afterwards he was immersed in business at Sheffield, where he became very successful as a steel manufacturer; but all through his business struggles he never lost his attachment for ornithology, and made short expeditions to various parts of Europe to gain an original experience of the habits of birds for his 'History of British Birds,' which he had in contemplation. In the course of these studies he visited most of the countries of Europe, Greece, Asia Minor, Russia, Norway, Denmark, Heligoland, many parts of Germany and Austria, the Engadine, Holland, and parts of France. In company with Mr. J. A. Harvie-Brown he undertook, in the summer of 1875, his celebrated expedition to the valley of the Lower Petchora, in northern Russia, in quest of the eggs of the Gray Plover and the Little Stint, both of which they managed to find, though they did not succeed in discovering the eggs of the Curlew Sandpiper. In 1877 he went alone to the valley of the Yenisei, in Siberia, and again obtained important ornithological results. On this occasion his ship was wrecked, and he built another, which he named the 'Ibis,' and in which he successfully returned to England by the North Cape."

In addition to numerous important papers in various scientific journals, Mr. Seebohm is the author of several monographs and faunal works of high value, among which are his 'Catalogue of the Turdidæ' (1881), forming Volume V of the British Museum Catalogue of Birds[1]; 'A His-

[1] *Cf.* Bull. Nutt. Orn. Club, VII, pp. 99–104.

tory of British Birds' (2 vols., 1883–84)[1]; 'The Geographical Distribution of the Charadriidæ, or the Plovers, Sandpipers, Snipes, and their Allies' (4to, 1888)[2]; 'The Birds of the Japanese Empire' (1 vol. 8vo, 1890)[3]; 'Classification of Birds: an attempt to diagnose the Subclasses, Orders, Suborders, and some of the Families of existing Birds' (1890).[4] His two chief works of travel — 'Siberia in Europe' and 'Siberia in Asia' — have attained well-merited popularity, on account of the interest of the regions visited and the pleasant manner in which the narratives are presented.

Mr. Seebohm was an earnest and original investigator and a vigorous and at times a somewhat aggressive writer. He was also untrammeled by precedents and traditions, which to some extent detracted from the utility of his work, but on the other hand gave him an independence that favored the development of new lines of thought and the adoption of new methods.

Mr. Henry T. Wharton, a Corresponding Member of the American Ornithologists' Union, died recently at his home in Hants, England. Mr. Wharton was a well-known expert on British birds, an important list of which was published by him in 1877. Mr. Wharton was also Secretary and General Editor for the B. O. U. Committee, appointed in 1878 to draw up a list of British Birds, which was finally published in 1883. Mr. Wharton not only acted as editor, but contributed the etymological notes relating to the scientific names.

We regret to learn that Volume II of Major Bendire's 'Life Histories of North American Birds,' although in type since last July, is not likely to be issued for several months, owing to delays in the Government Printing Office at Washington.

Two courses of ornithological lectures are to be given as the third series of Biological Lectures at Columbia College, New York, during January 1896, the courses being respectively by Mr. Frank M. Chapman, Assistant Curator of Ornithology in the American Museum of Natural History, and by Professor C. Lloyd Morgan, F. R. S., of University College, Bristol, England, author of 'Animal Life and Intelligence.' The courses will consist of four lectures each, and will be given in the Hall of the Academy of Medicine, 17 West 43d Street at 5 P. M. on Tuesdays and Fridays. Mr. Chapman's course will be on 'The Distribution, Migration, Nesting, Colors, and Structural Adaptations of Birds,' and will occur on January 7, 14, and 28, and February 4. Professor Morgan's course is entitled 'The Instincts of Birds in Relation to Habit and Inheritance,' and will be given on January 10, 17, 24, and 31. Tickets for the two courses may be procured at the College offices or at the Biological Department of the University.

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[1] *Cf.* Auk, II, pp. 88–91.

[2] *Ibid.*, V, pp. 189–194.

[3] *Ibid.*, VIII, pp. 99–101.

[4] *Cf.* Ibis, 1890, pp. 379–381.

THE KENT ORNITHOLOGICAL CLUB was reorganized at Grand Rapids, Mich., on Dec. 12, 1895, under the name of the Michigan Ornithological Club. The following officers were elected for 1896: A. B. Durfes, President; R. R. Newton, Vice-President; W. E. Mulliken, Secretary; Prof. C. A. Whittemore, Treasurer; Leon J. Cole, Librarian.

The Club will take up a systematic study of the birds of the State and it is hoped all Michigan ornithologists will address the Secretary, 191 First Avenue, Grand Rapids, Mich., for particulars at once.

AT THE Thirteenth Congress of the A. O. U. Mr. William Dutcher, in behalf of the 'Committee on Protection of North American Birds,' stated that the same precautions had been taken during the breeding season of 1895 as in 1894, regarding the protection of Terns on Great Gull Island, New York. A special game protector had been employed, several of the Natural History Societies of New York City contributing toward the payment of his salary. Absolutely no shooting had been done and parties who visited the island during the summer were prevented from collecting eggs. As Great Gull Island is the property of the United States Government it will always be a breeding ground for Terns, if properly protected. The number of birds now in the colony on this island was estimated at 3500 — a large increase from the previous year. Mr. Dutcher thought that the numerous cottages now built and being erected on all portions of the New York coast would prevent the Terns from again nesting there.

Mr. William Brewster said that the Terns on Muskeget Island, Mass., had increased from year to year, the result of protection. No birds had been shot on or near the island the past year and very few eggs had been collected. A notable increase was seen also in the colony of Laughing Gulls at the same place. Great credit is due Mr. Geo. H. Mackay for his continuous efforts in saving the Gulls and Terns on this island from destruction.

Mr. Witmer Stone knew of only one colony of Terns on the New Jersey coast. As the birds nested back in the meadows and away from the coast, it was difficult to protect them, but he did not think they decreased in numbers. In recent years the 'eggers' (so-called) had destroyed immense numbers of the eggs of the Clapper Rail which nested in favorable localities along the coast of New Jersey. This Rail had increased the past season, as game wardens had watched the meadows and arrested several marauders.

Mr. Leverett M. Loomis remarked upon the wholesale destruction of birds and their eggs on the California coast during 1895.

A new 'Committee on Protection of North American Birds' was appointed, as follows: William Dutcher (Chairman), Ruthven Deane, Witmer Stone, Leverett M. Loomis, and Geo. H. Mackay.

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DEAN, R. H., Tennallytown, Washington, D. C.....1893
DE HAVEN, ISAAC NORRIS, Ardmore, Pa.....1893
DELAFIELD, JOSEPH L., 475 Fifth Ave., New York City.....1888
DENNE, DAVID, 100 St. Francois Xavier St., Montreal, Can.....1890
DETWILLER, Dr. JNO. W., Bethlehem, Pa.....1891
DEWEY, Miss MARGARET, 168 Pearl St., Springfield, Mass.....1892
DICKINSON, EDWIN, West Springfield, Mass.....1885
DICKINSON, JOSEPH A., Gresham, Nebr.....1894
DICKINSON, JOSEPH EDWARD, Rockford, Ill.....1894
DICKINSON, W. S., Tarpon Springs, Fla.....1891
DILLE, FREDERIC M , 611 McPhee Bldg., Denver, Colo.....1892
DIONNE, C. E., Laval Univ., Quebec, Can. 1893
DIXON, FREDERIC J., Fairmont, N. J.....1891
DOERTENBACH, WILLIAM FAUTZ, 226 Main St., Pueblo, Colo.....1894
DOUGHERTY, Capt. W. E., U. S. A., Hoopa Valley, Cala.....1890
DOUGLASS, BERT H., Burlington, Kansas 1890
DRAKE, LEWIS MARVIN, Blissfield, Mich.....1894
DURFEE, OWEN, Fall River, Mass.....1887
DUTCHER, Dr. B. H., New York Hospital, New York City..... 1886
DYCHE, Prof. L. L., Lawrence, Kansas..... 1886
EAMES, Dr. EDWIN H., Bridgeport, Conn. 1888
EASTMAN, HARRY D., Framingham, Mass.....1891
EATON, ALVAH A., Seabrook, N. H.....1890
EATON, E. H., Canandaigua, N. Y.....1895
EDDY, NEWELL A., 615 North Grant St., Bay City, Mich.....1885
EDGAR, NEWBOLD, 28 E. 39th St., New York City 1891
EDSON, JOHN M., New Whatcom, Washington.....1886
EDWARDS, WILLIAM SEYMOUR, Charleston, W. Va.....1894
ELDON, CHARLES H., Williamsport, Pa.....1891
ELROD, Prof. M. J., Illinois Wesleyan Univ., Bloomington, Ill.....1892
ERWIN, GORDON W., Y. M. C. A., Sedalia, Mo.....1892
EVANS, Dr. EVAN M., Englewood, N. J.....1888
EVERMANN, Prof. BARTON W., U. S. Fish Comm., Washington, D. C. 1883
FANNIN, JOHN, Provincial Museum, Victoria, B. C.....1888
FANNING, JED FRYE, Kingston, Mass.....1895
FARLEY, JOHN A., Newton, Mass.....1892
FAXON, Dr. WALTER, Mus. Comp. Zoöl., Cambridge, Mass.....1891
FERGUSON, CHAUNCEY COFFIN, Merrimac, Mass.....1894
FERNALD, ROBERT HEYWOOD, 26 Cornell St., Cleveland, Ohio.....1890

FERRY, JOHN FARWELL, Lake Forest, Lake Co., Ill. 1894
FIGGINS, JESSE DADE, Kensington, Md. 1889
FISHER, WILLIAM H., 14 W. North Ave., Baltimore, Md. 1895
FISHER, WILLIAM HUBBELL, 12 Wiggins Block, Cincinnati, Ohio. ... 1883
FLANDERS, JAMES WALTER, Wilmot Flat, N. H 1894
FLEMING, JAMES H., Toronto, Can. 1893
FLINT, HARRY W., Yale National Bank, New Haven, Conn 1888
FLINT, WILLIAM R., Oakland, Cala. 1890
FLOOD, OLIVER D., Malden, Mass. 1893
FLOYD, HARRY WEBB, 2 Verona Place, Brooklyn, N. Y. 1892
FORBUSH, EDWARD H., Malden, Mass. 1887
FOSTER, FRANCIS APTHORP, Cambridge, Mass. 1893
FOWLER, FREDERICK HALL, Fort Logan, Colo. 1892
FOWLER, Capt. J. L., 2d Cavalry U. S. A., Fort Logan, Colo. 1892
FOX, Dr. WILLIAM H., 1826 Jefferson Place, Washington, D. C. 1883
FRANCIS, NATHANIEL ATWOOD, Brookline, Mass. 1893
FROST, ALBERT H., 255 W. 74th St., New York City 1893
FUERTES, LOUIS AGASSIZ, Ithaca, N. Y. 1891
FULLER, CHARLES ANTHONY, Brookline, Mass. 1894
GALE, DENIS, Gold Hill, Boulder Co., Colo 1886
GARCELON, FREDERICK ALMONT, Auburn, Me 1895
GARMAN, Prof. H., State College, Lexington, Ky 1893
GARNIER, RALPH LEE, 8 Stockton St., Los Angeles, Cala. 1894
GAULT, BENJAMIN T., Glen Ellyn, DuPage Co., Ill. 1885
GILBERT, Prof. CHARLES H., Stanford University, Cala. 1892
GILLET, LOUIS B., 131 E. 76th St., New York City 1895
GILMAN, ARTHUR SCOTT, 5 Waterhouse St., Cambridge, Mass. 1895
GLEASON, Rev. HERBERT W., 728 E. 18th St., Minneapolis, Minn. .. 1894
GOODALE, Dr. JOSEPH LINCOLN, 3 Fairfield St., Boston, Mass. 1885
GOULD, JOSEPH E., Dennison, Ohio 1889
GRANGER, WALTER W., Am. Mus. Nat. Hist., New York City 1891
GRANT, JNO. B., Flushing, N. Y. 1890
GREEN, MORRIS M., 706 E. Fayette St., Syracuse, N. Y. 1886
GREENE, I. C., Fitchburg, Mass. 1891
GREGG, Dr. WILLIAM H., Port Chester, N. Y. 1883
GRINNELL, JOSEPH, Passadena, Cala. 1894
HAHN, Rev. BENJAMIN DAVIESE, 266 Union St., Springfield, Mass. .. 1894
HALES, HENRY, Ridgewood, N. J. 1890
HAM, JUDSON BAXTER, Lyndon Centre, Vt. 1894
HAMFELDT, A., Ottawa, Ill. 1892
HAMLIN, GEORGE L., Bethel, Conn 1893
HANCOCK, Dr. JOSEPH LANE, Michigan Ave., Chicago, Ill. 1894
HARGITT, Prof. CHARLES W., 904 E. Genesee St., Syracuse, N. Y. .. 1892
HARDY, MANLY, Brewer, Maine 1883
HARRIS, WILLIAM C., Utica, N. Y. 1894
HARTZELL, Prof. JOSEPH CULVER, Orangeburg, S. C. 1892
HASBROUCK, Dr. EDWIN M., 2510 14th St., N. W., Washington, D. C. . 1887

HATCH, JESSE MAURICE, Escondido, Cala.....1894
HAVEMEYER, H. O., Jr , Mahwah, N. J.....1893
HAZARD, R. G., Peace Dale, R. I.....1885
HEAPHY, Dr. LAWRENCE F., 104 E. 26th St., New York City.....1894
HECKER, FREDERICK C., Noroton, Conn.....1893
HECKER, GEORGE E., Noroton, Conn.....1893
HEDGES, CHARLES F., New Haven, Conn.....1891
HEIMSTREET, Dr. T. B., 14 Division St., Troy, N. Y.....1888
HELME, ARTHUR H., Miller's Place, Suffolk Co., N. Y.....1888
HENDRICKSON, W. F., 130 12th St., Long Island City, N. Y.....1885
HENNING, CARL FRITZ, Boone, Iowa.....1892
HICKS, BENJAMIN D., Old Westbury, N. Y.....1892
HIGGINS, HENRY C., Cincinnatus, N. Y.....1892
HINE, J. BRAINARD, East Onondaga, N. Y.....1895
HINE, Mrs. JANE L., Sedan, Ind.....1890
HITCHCOCK, FRANK HENRY, Dept. of Agriculture, Washington, D.C. 1891
HOAG, BENJAMIN, Stephentown, N. Y.....1892
HOFFMAN, RALPH, Belmont, Mass.....1893
HOLCOMB, LEON C., 14 Howard St., Springfield, Mass.....1893
HOLLISTER, NED, Delavan, Wis.....1894
HOLMES, F. H., Berryessa, Cala.....1893
HOLZNER, FRANK X., San Diego, Cala.....1893
HOMER, F. L., West Farmington, Ohio.....1893
HOOPES, JOSIAH, West Chester, Pa.....1889
HOOVER, WALTER W., Wellsville, Pa.....1895
HORNADAY, W. T., 53 Erie Co. B'k Bldg., Buffalo, N. Y.....1888
HOUGH, ROMEYN B., Lowville, N. Y.....1883
HOWE, C. P., Waukesha, Wis.....1891
HOWE, REGINALD HEBER, Jr., Sta. D., Boston, Mass.....1899
HOWELL, ARTHUR H., Putnam Ave., Brooklyn, N. Y.....1885
HOYLE, CHARLES E., West Millbury, Mass.....1889
HOYT, WILLIAM H., Stamford, Conn.....1888
HUBBARD, Mrs. SARA A., 39 33rd St., Chicago, Ill.....1891
HUGHES, Dr. WILLIAM E., 3726 Baring St., Philadelphia, Pa.....1891
HULL, WALTER B , Box 47, Milwaukee, Wis.....1889
HUNN, JOHN T. SHARPLESS, Plainfield, N. J.....1895
HUNTER, Miss SUSAN MORRISON, Newport, R. I.....1894
HURD, THEODORE D., Riverside, Cala.....1890
HVOSLEF, Dr. J. C., Lanesboro, Minn.....1885
INGALLS, CHARLES E., East Templeton, Mass.....1885
INGERSOLL, ALBERT M., 818 5th St., San Diego, Cala.....1885
INGERSOLL, JOSEPH CARLETON, Bowie, Md.....1895
INGRAHAM, D. P., Beulah, Colo.....1889
IRVING, JOHN, 550 Park Ave., New York City.....1894
ISHAM, C. B., Am. Mus. Nat. Hist., New York City.....1891
JACKSON, THOMAS H., West Chester, Pa.....1888
JACOBS, J. WARREN, Waynesburg, Pa.....1889

JAMES, HOWARD K., 225 W. 38th St., New York City.....1888
JEFFRIES, WILLIAM AUGUSTUS, 78 Devonshire St., Boston, Mass.....1883
JESURUN, Dr. MORTIMER, Douglas, Wyoming.....1890
JOHNSON, ALBERT I., Des Moines, Iowa.....1885
JOHNSON, A. W., Upper Lake, Lake Co., Cala.....1893
JOHNSON, FRANK E., Parkville, Kings Co., N. Y.....1888
JOHNSON, JAMES HOWARD. Mansfield, Mass.....1894
JOHNSON, WALTER A., Galesburg, Ill.....1895
JOHNSON, WM. S., Boonville, N. Y.....1893
JOHNSTON, CHARLES HAVEN LADD, Cambridge, Mass.....1894
JONES, LYNDS, College Museum, Oberlin, Ohio.....1888
JONES, Prof. MARCUS E., Salt Lake City, Utah.....1890
JORDAN, A. H. B., Johnsonburg, Pa.....1888
JORDAN, Prof. DAVID STARR, Stanford University, Cala.....1885
JUDD, ELMER T., Cando, No. Dak.....1895
JUDD, SYLVESTER D., Dept. of Agriculture, Washington, D. C.....1893
JUSTICE, WILLIAM W., Jr., Germantown, Philadelphia, Pa.....1895
KELLOGG, VERNON L., Stanford University, Cala.....1888
KENDALL, W. C., U. S. Fish Commission, Washington, D. C.....1886
KENNARD, FREDERIC HEDGE, Brookline, Mass.....1892
KENT, Prof. WALTER F., Lockport, N. Y.....1893
KEYSER, Rev. LEANDER S., Dayton, Ohio.....1891
KIMBALL, R. E., 631 G St., N. W., Washington, D. C.....1893
KING, GEORGE GORDON, Newport, R. I.....1888
KIRKPATRICK, H. C., Meadville, Pa.....1891
KIRKWOOD, FRANK C., P. O. Box 364, Baltimore, Md.....1892
KNIGHT, ORA WILLIS, Bangor, Me.....1893
KNOWLTON, F. H., U. S. Nat. Mus., Washington, D. C.....1883
KOCH, Prof. AUGUST, Williamsport, Pa.....1891
KOCH, FREDERIC W., Univ. Cala., Berkeley, Cala.....1891
KOHN, GUSTAVE, 14 Carondelet St., New Orleans, La.....1886
KOUMLY, Rev. PIRMINE M., St. Benedict's College, Atchison, Kan....1892
KRAEMER, FREDERICK L., Box 198, Williamsport, Pa.....1893
KROM, STEPHEN ARTHUR, Plainfield, N. J.....1894
KUMLIEN, LUDWIG, Milton, Wis.....1895
LADD, SAMUEL B., West Chester, Pa.....1889
LAHEE, EUGENE H., Alton, Ill.....1893
LANGDON, EDWIN, Central National Bank, New York City.....1891
LANO, ALBERT, Madison, Minn.....1890
LANTZ, Prof. D. E., Manhattan, Kansas.....1885
LAWRENCE, HIRAM V., 203 Bedford Ave., Brooklyn, N. Y.....1895
LAWRENCE, ROBERT B., Flushing, N. Y.....1883
LAWRENCE, ROBERT HOE, 45 William St., New York City.....1890
LEVINGS, GLENN V. B., 117 W. 58th St., New York City.....1892
LEWIS, WILLIAM H., Pawtucket, R. I.....1890
LINSKILL, DAVID J., Plymouth, Pa.....1891
LIVERMORE, J., Newport, R. I.....1893

LONG, H. B., Worcester, Mass.....1889
LOOMIS, JOHN A., Paint Rock, Concho Co., Texas.....1887
LORING, J. ALDEN, Dept. of Agriculture, Washington, D. C.....1889
LOWE, WILLOUGHBY P., Pueblo, Colo.....1893
LUHRMAN, JOHN, Jr., 158 Pacific Ave., Jersey City, N. J.....1893
LUSK, RICHARD D., Fort Huachuca, Ariz.....1894
MACDOUGALL, GEO. R., 88 Wall St., New York City.....1890
MACKAY, Dr. A. H., Halifax, Nova Scotia.....1885
MACKAY, GEORGE H., Nantucket, Mass.....1890
MACOUN, Prof. JOHN, Geol. and Nat. Hist. Surv., Ottawa, Ontario..1883
MAILLIARD, JOHN W., 323 California St., San Francisco, Cal.....1895
MAILLIARD, JOSEPH, San Geronimo, Cal.....1895
MANN, Rev. ALBERT, 132 E. Hanover St., Trenton, N. J.....1894
MARCY, Prof. OLIVER, Evanston, Ill.....1892
MARIS, WILLARD LORRAINE, Newton, Bucks Co., Pa.....1894
MARSH, DANIEL J., Springfield, Mass.....1894
MASTERMAN, ELMER ELLSWORTH, New London, Ohio.....1895
MAXON, WILLIAM RALPH, 132 Main St., Oneida, N. Y.....1894
MAY, FRANK DWIGHT, Jr., 17 Huntington St., Hartford, Conn.....1894
MAYNARD, COLTON, 1407 15th St., N. W., Washington, D. C.....1895
MCCOOK, PHILIP JAMES, Knoxville, Ill.....1895
MCCORMICK, LOUIS M., Glen Island, N. Y.....1892
MCGREGOR, R. C., Palo Alto, Cala.....1889
MCILHENNY, EDWARD AVERY, Avery, La.....1894
MCLAIN, ROBERT BAIRD, Elm Grove, W. Va.....1893
MAITLAND, ROBERT L., 10 E. 35th St., New York City.....1889
MALI, CHARLES M., 93 Willow St., Brooklyn, N. Y.....1889
MARSHALL, ALFRED, 59 South Canal St., Chicago, Ill.....1886
MASON, EDWARD CAMPBELL, 76 Johnsons Park, Buffalo, N. Y.....1888
MELZER, JAMES P., Milford, N. H.....1891
MERRIAM, Miss FLORENCE A., 1919 16th St., N. W., Washington, D. C.1885
MERRILL, HARRY, Bangor, Maine.....1883
METCALFE, WILLIAM C., 21 Cortlandt St., New York City.....1886
MILLER, GERRIT SMITH, Jr., Peterboro', N. Y.....1886
MILLER, HARRY EDWARD, Derby Conn.....1892
MILLER, JAMES HENRY, Lowville, N. Y.....1894
MILLER, Mrs. OLIVE THORNE, 628 Hancock St., Brooklyn, N. Y.....1887
MILLS, R. WALTER, Webster Groves, Mo.....1893
MITCHELL, WALTON I., 534 Summit Ave., St. Paul, Minn.....1893
MOORE, J. PERCY, Univ. of Pa., Philadelphia, Pa.....1886
MORCOM, G. FREAN, 328 So. Broadway, Los Angeles, Cala.....1886
MORRIS, GEORGE SPENCER, Olney, Philadelphia, Pa.....1887
MORRIS, ROBERT O., Springfield, Mass.....1888
MORRISON, GEORGE A., Fox Lake, Wis.....1891
MUMMERY, WALTER S., Flint, Mich.....1895
MURDOCH, JOHN, Rock, Mass.....1883
MURPHY, Prof. EUGENE EDMUND, Athens, Ga.....1893

NACHTRIEB, Prof. HENRY F., Univ. of Minn., Minneapolis, Minn....1892
NASH, H. W., Pueblo, Colorado.....1892
NEAL, HERBERT VINCENT, 31 Holyoke St., Cambridge, Mass.....1894
NICHOLS, EUGENE C., Flushing, N. Y.....1895
NICHOLS, HOWARD GARDNER, Alabama City, Ala.....1892
NICHOLS, J. M., Peabody, Mass.....1890
NISWANDER, Prof. F. J., Univ. of Wyoming, Laramie, Wy.....1893
NORRIS, GUY BRUNAUGH, Garden City, Kans.....1894
NORRIS, Rev. JAMES AVERY, Hastings-on-Hudson, N. Y.....1894
NORRIS, J PARKER, 723 Walnut St., Philadelphia, Pa.....1886
NORTON, ARTHUR H., Westbrook, Maine.....1890
NORTON, ARTHUR HENRY WHITELEY, San Antonio, Texas.....1894
NORTON, RICHARD, Cambridge, Mass.....1888
OBERHOLSER, HARRY C., Dept. of Agriculture, Washington, D. C...1888
OLDFIELD, W. A., Port Sanilac, Mich.....1891
O'NEIL, EDWARD, Sewickley, Allegheny Co., Pa.....1893
ORTH, GEORGE S., 406 S. Hiland Ave., Pittsburgh, Pa.....1892
OSBORN, CHASE SALMON, Sault Ste. Marie, Mich.....1893
OSBORNE, JOHN LANG, Manchester, N. H.....1894
OSBURN, Rev. WILLIAM, Nashville, Tenn.....1890
OSGOOD, WILFRED H., Willcox, Cochise Co., Ariz.....1893
OWEN, VIRGIL WILLIAMS, P. O. Box 774, Los Angeles, Cala.....1894
PAINE, AUGUSTUS G., Jr., 47 W. 45th St., New York City.....1886
PALMER, E. L., New Haven, Conn.....1891
PALMER, Dr. THEODORE S., Dept. of Agriculture, Washington, D. C..1888
PALMER, WM., U. S. Nat. Mus., Washington, D. C.....1888
PANNEPACKER, D. E., 2550 North 12th St., Philadelphia, Pa.....1888
PARK, J. T., Jackson, Miss.....1890
PARKER, J. GRAFTON, Jr., 100 Washington St., Chicago, Ill.....1894
PEABODY, Rev. P. B., St. Vincent, Minn.....1891
PEABODY, WILLIAM RODMAN, Cambridge, Mass.....1890
PEACOCK, WILLIAM F., Chico, Butte Co., Cala.....1888
PENNOCK, CHARLES J., Kennett Square, Chester Co., Pa.....1888
PERKINS, CHARLES E., Hartford, Conn.....1888
PERNOT, E. A., Granger, Benton Co., Oregon.....1891
PETERSON, J. P., West Denmark, Polk Co., Wis.....1885
PHELPS, WILLIAM HENRY, Cambridge, Mass.....1895
PHILLIPS, A. H., Princeton, N. J.....1891
PIERCE, A. K., Renovo, Pa.....1891
PIERS, HARRY, "Stanyan," Willow Park, Halifax, N. S.....1891
PLEASANTS, J. H., Jr., 606 Cathedral St., Baltimore, Md.....1888
POMEROY, HARRY KIRKLAND, P. O. Box 575, Kalamazoo, Mich.....1894
POPENOE, Prof. E. A., Manhattan, Kan.....1886
PORTER, LOUIS H., Yale Univ., New Haven, Conn.....1893
POTTER, RAYMOND B., Nyack, N. Y.....1895
POWERS, WILLIAM LINCOLN, Gardiner, Maine.....1895
PRAEGER, WILLIAM E., Keokuk, Iowa.....1892

PRATT, Rev. GEORGE B., 61 Laflin St., Chicago, Ill.....1895
PREBLE, EDWARD A., Dept. of Agriculture, Washington, D. C.....1892
PRENTISS, D. W., Jr., Washington, D. C.....1890
PRICE, WILLIAM W., Stanford University, Cala.....1893
PRIME, Rev. WENDELL, 38 Park Row, New York City.....1889
PURDY, JAMES B., Plymouth, Mich.....1893
RAINE, WALTER, 181 Bleeker St., Toronto, Ontario.....1889
RALPH, Dr. WILLIAM L., 26 Court St., Utica, N. Y.....1888
RANN, Mrs. MARY L., Manchester, Iowa.....1893
RAUB, Dr. M. W., Lancaster, Pa.....1890
RATHBUN, FRANK R., 42½ Franklin St., Auburn, N. Y.....1883
RATHBUN, SAMUEL F., Seattle, Wash.....1893
RAWSON, CALVIN LUTHER, Norwich, Conn.....1885
READ, ALBERT M., 1140 15th St., N. W., Washington, D. C.....1895
REDINGTON, ALFRED P., Santa Barbara, Cala.....1890
REED, J. HARRIS, Beverly, N. J.....1890
REED, HOWARD S., 1320 Gaylord St., Denver, Colo.....1894
RENWICK, FRANK H., Seattle, Wash.....1893
RHOADS, CHARLES J., Bryn Mawr, Pa.....1895
RHOADS, SAMUEL N., Haddonfield, N. J.....1885
RICHARDS, JOHN BION, 10 Barnaby St., Fall River, Mass.....1888
RICHARDSON, W. M., Am. Mus. Nat. Hist., New York City.....1891
RICHMOND, CHARLES W., 1307 T St., N. W., Washington, D. C.....1888
RICKER, EVERETT WILDER, P. O. Box 5083, Boston, Mass.....1894
RIDGWAY, JOHN L., U. S. Geol. Surv., Washington, D. C.....1890
RIKER, CLARENCE B., Maplewood, N. J.....1885
RIVES, Dr. WILLIAM C., 22 W. 33d St., New York City.....1885
ROBBINS, LINVILLE WADSWORTH, Gardiner, Me.....1895
ROBBINS, WILLIAM A., 178 Garfield Place, Brooklyn, N. Y.....1888
ROBINS, JULIA STOCKTON, 114 S. 21st St., Philadelphia, Pa.....1895
ROBERTS, GEORGE W., West Chester, Pa.....1891
ROBERTS, W. F., 1421 G St., N. W., Washington, D. C.....1888
RODDY, Prof. H. JUSTIN, Millersville, Pa.....1891
ROOD, Mrs. E. IRENE, Englewood, Cook Co., Ill.....1893
ROOSEVELT, Hon. THEODORE, Oyster Bay, Queens Co., N. Y.....1888
ROTH, PAUL WAGNER, Greenville, Pa.....1895
ROTZELL, Dr. W. E., Narberth, Pa.....1893
ROWLAND, RUSSELL STURGIS, Ann Arbor, Mich.....1895
ROWLAND, THOMAS, 182 6th Ave., New York City.....1890
ROWLEY, JOHN, Jr., Am. Mus. Nat. Hist., New York City.....1889
ROZYCKI, STEPHEN, Navy Dept., Washington, D. C.....1894
RUSSELL, GEORGE C., Erie, Pa.....1888
RUSSELL, ROY, Kokomo, Indiana.....1891
RUSSELL, WILLIAM BLACK, Fiskdale, Mass.....1893
SAGE, HENRY M., Albany, N. Y.....1885
SARGENT, HARRY B., 41 W. 82d St., New York City.....1892
SAVAGE, DAVID LEWIS, Salem, Iowa.....1894

SAVAGE, JAMES, 134 Abbott St., Buffalo, N. Y.....1895
SCHALER, JOHN, Stamford, Conn.....1893
SCHRAGE, E. B., Pontiac, Mich.....1895
SCHURR, THEODORE A., Pittsfield, Mass.....1888
SCHWAB, Rev. LAWRENCE H., 101 Lawrence St., New York City....1892
SCOTT, W. L., 74 Sparks St., Ottawa, Ontario.....1883
SCROGGS, Dr. G. A., Tempe, Ariz.....1891
SCUDDER, BRADFORD A., Taunton, Mass.....1893
SHARPLESS, ROBERT P., Elgin, Ill.....1894
SHEARER, AMON R., Wallaceville, Chambers Co., Texas.....1893
SHEPPARD, EDWIN, Acad. Nat. Sci., Philadelphia, Pa.....1892
SHERRATT, W. J., 263 North 2d St., Philadelphia, Pa.....1891
SHOEMAKER, FRANK H., Hampton, Iowa.....1895
SHORES, Dr. E. I., West Bridgewater, Mass.....1883
SHORT, ERNEST H., Chili, N. Y.....1891
SHRYOCK, WILLIAM A., 823 N. Broad St., Philadelphia, Pa.....1893
SKINNER, FRANCIS B., Rockville, Conn.....1894
SLADE, JOHN A., 1134 Herkimer St., Brooklyn, N. Y.....1888
SMALL, ALBERTO WILLIAM, Antrim, N. H.....1895
SMITH, CLARENCE A., 182 Fifth Avenue, New York City.....1889
SMITH, HORACE G., 2918 Lafayette St., Denver, Colo.....1888
SMITH, Dr. HUGH M., 1248 New Jersey Ave., Washington, D. C.....1886
SMITH, JAMES E., East Killingly, Conn.....1889
SMITH, S. SIDNEY, 59 Wall St., New York City.....1888
SMYTH, Prof. ELLISON A., Jr., Agr. and Mech. Coll., Blacksburg, Va..1892
SNYDER, WILL EDWIN, Beaver Dam, Wis.....1895
SORNBORGER, JEWELL D., Cambridge, Mass.....1888
SOUTHWICK, E. B., Arsenal Bldg., Central Park, New York City....1888
SPAULDING, FRED. B., Lancaster, N. H.....1894
SPELMAN, HENRY MUNSON, 62 Sparks St., Cambridge, Mass.....1883
SPRAGUE, JOHN C., 257 W. 74th St., New York City.....1891
SPRATT, CHESMAN CHADWICK, Richmond, Maine.....1894
STANTON, Prof. J. Y., Bates College, Lewiston, Me.....1883
STEERE, Prof. J. B., Ann Arbor, Mich.....1890
STEERE, JOSEPH H., Sault Ste. Marie, Mich.....1894
STEPHENS, F., Witch Creek, San Diego Co., Cala.....1883
STEPHENSON, Mrs. LOUISE McGOWN, Helena, Ark.....1894
STICKNEY, MYRON WILDER, 62 George St., Providence, R. I.....1895
STOEY, W. W., Harrisburg, Pa.....1891
STONE, CLARENCE FREEDOM, Branchport, N. Y.....1894
STONE, DWIGHT D., Lansing, N. Y.....1891
STONEBURN, FRED H., Newark, N. J.....1893
STREATOR, CLARK P., Dept. of Agriculture, Washington, D. C.....1889
STREEKER, JOHN KERN, Jr., Waco, Texas.....1894
STRONG, REUBEN M., Oberlin, Ohio.....1889
STUDER, JACOB HENRY, 114 Fifth Ave., New York City.....1888
SWINBURNE, JOHN, Guernsey, England.....1887

TALBOT, D. H., Sioux City, Iowa.....1885
TATLOCK, JOHN, Jr., Mutual Life Ins. Co., New York City.....1887
TAYLOR, ALEXANDER O'DRISCOLL, 124 Bellevue Ave., Newport, R. I. 1888
TAYLOR, H. H., 63 Park Place, Bridgeport, Conn.....1893
TEST, FREDERICK CLEVELAND, Dept. of Agriculture, Washington, D. C.....1892
THOMAS, JOHN, Sharon, Pa.....1895
THOMPSON, ERNEST E., 86 Howard St., Toronto, Can.....1883
THOMPSON, FRANK J., Zoölogical Garden, Philadelphia, Pa.....1885
THOMSON, Prof. GEORGE S., Los Angeles, Cala.....1892
THORNE, Capt. PLATTE M., 22d Inf. U. S. A., 102 Spring St., Rochester, N. Y.....1885
THURBER, E. CARLETON, Alhambra, Cala.....1886
TODD, LOUIS M., Calais, Me.....1887
TODD, W. E. CLYDE, Dept. of Agriculture, Washington, D. C.....1890
TOPPAN, GEORGE L., 294 Newbury St., Boston, Mass.....1886
TORREY, BRADFORD, Wellesley Hills, Mass.....1883
TOWNSEND, CHARLES H., U. S. Fish Comm., Washington, D. C.....1883
TOWNSEND, WILMOT, Bay Ridge, N. Y.....1894
TREAT, WILLARD E., Silver Lane, Conn.....1885
TROMBLEY, JEROME, Petersburg, Mich.....1885
TROTTER, Dr. SPENCER, Swarthmore College, Swarthmore, Pa.....1888
TROVILLION, Dr. E. B., Gold Hill, Colo.....1893
TUTTLE, Dr. CARL, Berlin Heights, Ohio.....1890
VAN CORTLANDT, Miss ANNE S., Croton-on-Hudson, N. Y.....1885
VAN DENBURG, JOHN, Acad. Sci., San Francisco, Cala.....1893
VAN WINKLE, EDMUND, Vans Harbor, Mich.....1894
VAUGHAN, CLIFFORD WHEATON, 47 W. 83d St., New York City.....1894
VELIE, Dr. J. W., St. Joseph, Mich.....1886
VILARO, Dr. JUAN, Havana Univ., Havana, Cuba.....1888
VOORHEES, CLARK G., 64 W. 39th St., New York City.....1888
WALCOTT, ROBERT, 11 Waterhouse St., Cambridge, Mass.....1893
WALKER, Dr. R. L., Carnegie, Pa.....1888
WALL, EDWARD, San Bernardino, Cala.....1894
WALTER, HERBERT EUGENE, 402 Center St., Chicago, Ill.....1894
WARREN, Dr. B. H., Dept. of Agriculture, Harrisburg, Pa.....1885
WARREN, OSCAR BIRD, Palmer, Mich.....1892
WATERS, EDWARD STANLEY, Holyoke, Mass.....1894
WATKINS, L. WHITNEY, Manchester, Mich.....1894
WEBSTER, FREDERIC S., 106 E. 23d St., New York City.....1886
WEBB, WALTER F., Albion, N. Y.....1891
WEEKS, DAVID FRANKLIN, Portland, Oregon.....1894
WEIDMAN, JOE, Ames, Iowa.....1893
WEST, LEWIS H., Roslyn, Queens Co., N. Y.....1887
WEST, SAMUEL H., Flushing, Queens Co., N. Y.....1889
WHITE, FRANCIS BEACH, Cambridge, Mass.....1891
WHITAKER, WILLIAM LINCOLN, Frankford P. O., Philadelphia, Pa...1894

WHOLEY, W. N., 204 Brady Ave., Baltimore, Md.....1891
WICKHAM, H. H., Beaver, Pa.....1890
WICKS, M. L., Jr., Los Angeles, Cala.....1890
WILBUR, ADDISON P., Canandaigua, N. Y.....1895
WILCOX, T. FERDINAND, 115 W. 75th St., New York City.....1895
WILDE, MARK L. C., Camden, N. J.....1893
WILLIAMS, Dr. HENRY SMITH, 66 W. 84th St., New York City.....1893
WILLIAMS, J. BICKERTON, 116 University St., Montreal, Can.....1889
WILLIAMS, ROBERT S., Columbia Falls, Montana.....1888
WILLIAMS, W. J. B., Holland Patent, N. Y.....1893
WILSON, SIDNEY S., St. Joseph, Mo.....1895
WILSON, WM. EDWARD, 387 Olney St., Providence, R. I 1894
WINTLE, ERNEST D., 11 Hospital St., Montreal, Can.....1887
WOOD, A. H., Painted Post, N. Y.....1887
WOODRUFF, FRANK M., Acad. Sci., Lincoln Park, Chicago, Ill.....1894
WOODRUFF, LEWIS B., 14 East 68th St., New York City.....1886
WOODS, WILLIAM J., State Bank Bldg., Richmond, Va.....1892
WOODWORTH, Mrs. NELLY HART, St. Albans, Vt.....1894
WORCESTER, Prof. DEAN C., Ann Arbor, Mich.....1895
WORTHEN, CHARLES K., Warsaw, Ill.....1891
WORTHINGTON, R. B., Dedham, Mass.....1893
WORTHINGTON, WILLIS W., Shelter Island, Suffolk Co., N. Y.....1889
WRIGHT, FRANK S., 51 Genesee St., Auburn, N. Y.....1894
WRIGHT, MRS. MABEL OSGOOD, Fairfield, Conn.....1895
WRIGHT, SAM., Conshohocken, Pa.....1895
YORKE, Dr. F. HENRY, Hallock, Minn.....1891
YOUNG, CURTIS CLAY, 395 Clermont Ave., Brooklyn, N. Y.....1891
YOUNG, HENRY LATHROP, Poughkeepsie, N. Y.....1894
ZWARG, EMIL, Marysville, Cala.....1893

DECEASED MEMBERS.

ACTIVE MEMBERS.

Date of Death.

BAIRD, SPENCER FULLERTON.....Aug. 19, 1887
GOSS, N. S.....March 10, 1891
HOLDER, JOSEPH B.....Feb. 28, 1888
JEFFRIES, JOHN AMORY.....March 26, 1892
WHEATON, JOHN M.....Jan. 28, 1887

HONORARY MEMBERS.

BURMEISTER, HERMANN.....May 1, 1892
GURNEY, JOHN HENRY.....April 20, 1890
HUXLEY, THOMAS H.....June 29, 1895

KRAUS, FERDINAND.....Sept. 15, 1890
LAWRENCE, GEORGE N.....Jan. 17, 1895
PARKER, WILLIAM KITCHEN.....July 3, 1890
PELZELN, AUGUST VON.....Sept. 2, 1891
SCHLEGEL, HERMANN.....Jan. 17, 1884
SEEBOHM, HENRY.....Nov. 26, 1895
TACZANOWSKI, LADISLAS.....Jan. 17, 1890

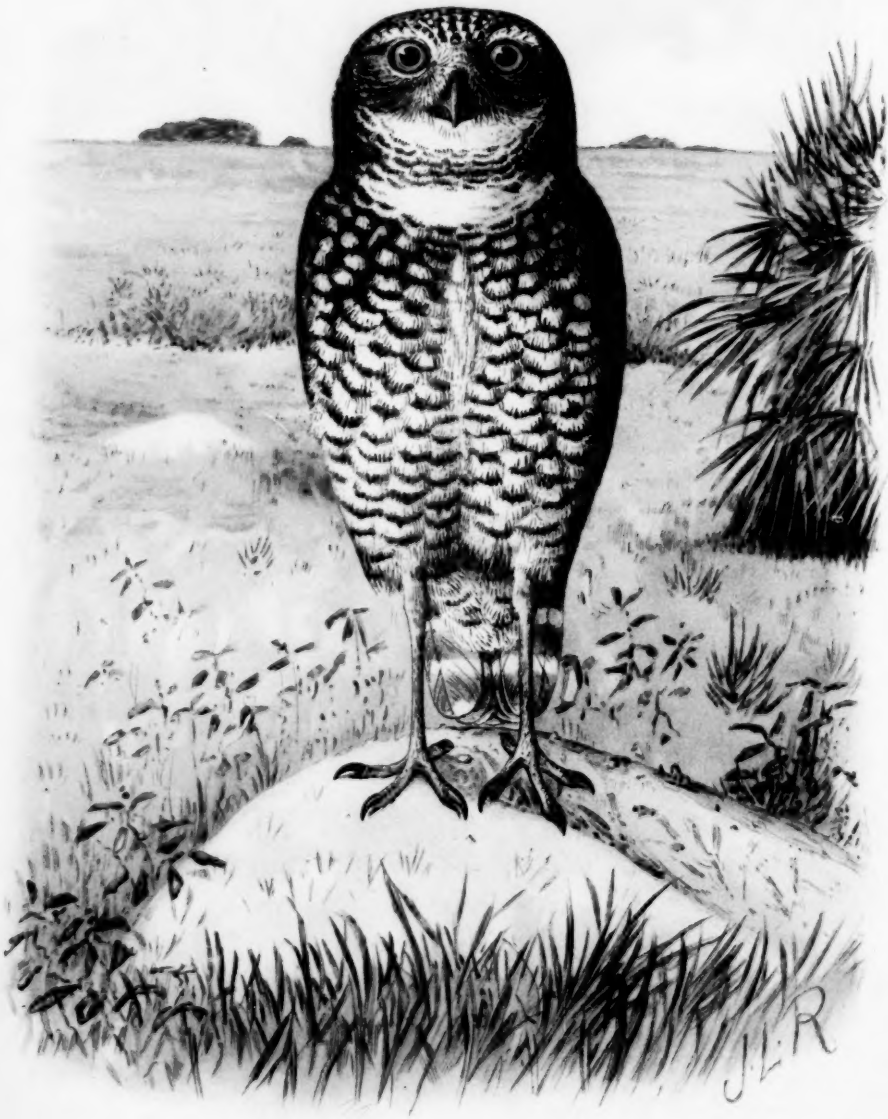
CORRESPONDING MEMBERS.

BALDAMUS, EDUARD.....Oct. 30, 1893
BLAKISTON, THOMAS W.....Oct. 15, 1891
BOGDANOW, MODEST N.....March 4, 1888
HAAST, JULIUS VON.....Aug. 15, 1887
HARGITT, EDWARD.....March 19, 1895
HOMEYER, E. F. VON.....May 31, 1889
MARSCHALL, A. F.....Oct. 11, 1887
MIDDENDORFF, ALEXANDER THEODOR VON.....Jan. 28, 1894
PREJEVALSKI, N. M.....Oct. 20, 1887
PRYER, HARRY JAMES STOVIN.....Feb. 17, 1888
SCHRENCK, LEOPOLD VON.....Jan. 20, 1894
SEVERTZOW, N.....Feb. 8, 1885
STEVENSON, HENRY.....Aug. 18, 1888
WHARTON, HENRY T.....Sept. —, 1895

ASSOCIATE MEMBERS.

ADAMS, CHARLES F.....May 20, 1893
ALLEN, CHARLES SLOVER.....Oct. 15, 1893
ATKINS, H. A.....May 19, 1885
AVERY, WILLIAM CUSHMAN.....March 11, 1894
BECKHAM, CHARLES WICKLIFFE.....June 8, 1888
BOLLES, FRANK.....Jan. 10, 1894
BREESE, WILLIAM L.....Dec. 7, 1889
CAIRNS, JOHN S.....June 10, 1895
CORNING, ERASTUS, JR.....April 9, 1893
COE, W. W.....April 26, 1885
ELLIOTT, S. LOWELL.....Feb. 11, 1889
FAIRBANKS, FRANKLIN.....April 24, 1895
GESNER, A. H.....April 30, 1895
GOSS, BENJAMIN F.....July 6, 1893
HOADLEY, FREDERIC H.....Feb. 26, 1895
HOWLAND, JOHN SNOWDON.....Sept. 19, 1885
JENKS, JOHN W. P.....Sept. 27, 1894
JOUY, PIERRE LOUIS.....March 22, 1894

KUMLIEN, THURE.....Aug. 5, 1888
LINDEN, CHARLES.....Feb. 3, 1888
MABBETT, GIDEON.....Aug. 15, 1890
MINOT, HENRY DAVIS.....Nov. 13, 1890
NORTHROP, JOHN I.....June 26, 1891
PARK, AUSTIN F.....Sept. 22, 1893
RAGSDALE, GEO. H.....March 25, 1895
RICHARDSON, JENNESS.....June 24, 1893
SLATER, JAMES H.....Feb. —, 1895
SMALL, EDGAR A.....April 24, 1884
STOWE, W. H.....March —, 1895
VENNOR, H. G.....June 8, 1884
WILLARD, SAMUEL WELLS.....May 24, 1887
WOOD, WILLIAM.....Aug. 9, 1885



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